

*Supers by FM 9-6*

MHI  
Copy 3

*June 1965*

**FM 9-17**

**DEPARTMENT OF THE ARMY FIELD MANUAL**

---

**ORDNANCE  
AMMUNITION  
COMPANY**



**HEADQUARTERS, DEPARTMENT OF THE ARMY  
FEBRUARY 1961**

FIELD MANUAL }  
No. 9-17 }

HEADQUARTERS,  
DEPARTMENT OF THE ARMY  
WASHINGTON 25, D.C., 6 February 1961

## ORDNANCE AMMUNITION COMPANY

|                                                                  | Paragraphs | Page |
|------------------------------------------------------------------|------------|------|
| CHAPTER 1. GENERAL.....                                          | 1-4        | 2    |
| 2. MISSION, CAPABILITIES, AND EMPLOYMENT.....                    | 5-8        | 3    |
| 3. ORGANIZATION, FUNCTIONS, AND EQUIPMENT.....                   |            |      |
| Section I. Organization and functions.....                       | 9-13       | 5    |
| II. Equipment.....                                               | 14-18      | 9    |
| CHAPTER 4. DUTIES OF PERSONNEL.....                              | 19-23      | 12   |
| 5. OPERATIONS.....                                               |            |      |
| Section I. Communications zone.....                              | 24-30      | 17   |
| II. Combat zone.....                                             | 31-35      | 18   |
| III. Special operations.....                                     | 36-40      | 19   |
| CHAPTER 6. ESTABLISHMENT OF AN AMMUNITION INSTALLATION.....      |            |      |
| Section I. Reconnaissance and site selection.....                | 41, 42     | 21   |
| II. Preparation for operations.....                              | 43-46      | 23   |
| CHAPTER 7. SECURITY AND DEFENSE.....                             | 47-57      | 28   |
| 8. COMMUNICATIONS.....                                           | 58-65      | 31   |
| APPENDIX I. REFERENCES.....                                      |            | 37   |
| II. LOADING PLAN FOR ORDNANCE AMMUNITION COMPANY (SAMPLE).....   |            | 40   |
| III. RECOMMENDED OUTLINE FOR A STANDING OPERATING PROCEDURE..... |            | 46   |
| INDEX.....                                                       |            | 48   |

## CHAPTER 1

## GENERAL

**1. Purpose**

This manual is a guide for personnel assigned to the Ordnance Ammunition Company, TOE 9-17D. It provides the company commander and other key personnel of the company with basic information needed to operate the unit in a manner that will result in efficient mission accomplishment.

**2. Scope**

a. This manual contains specific material on the organization, mission, employment, operational methods, communications, training, administration, logistics, and special problems of the ordnance ammunition company. Information pertaining to the general subject of ordnance ammunition service is contained in FM 9-1, Ordnance Service in the Field, and FM 9-5, Ordnance Ammunition Service.

b. Users of this manual are encouraged to submit recommended changes or comments to improve the manual. Comments should be keyed to the specific page, paragraph, and line of the text in which change is recommended. Reasons should be provided for each comment to insure understanding and complete evaluation. Comments should be forwarded direct to Commandant, U. S. Army Ordnance School, Aberdeen Proving Ground, Md.

**3. Application**

a. The material contained herein is applicable without modification to both nuclear and nonnuclear warfare. The provisions of this manual are applicable to field operations, both in the continental United States and in overseas commands. During resident and unit training, and field exercises, it is essential that ammunition services be taught and conducted in accordance with these prescribed procedures to insure efficient training of ammunition personnel. Ammunition officers, acting within their designated authority, may vary these procedures when it is evident that such variations will result in improved ammunition services to using units.

b. Appropriate references are listed in appendix I.

**4. Definitions**

The terms used throughout this manual are found in AR 320-5, Dictionary of United States Army Terms, except for those few not yet incorporated in this regulation. The latter are defined or explained in the text when first introduced, and may be located by referring to the index.

## CHAPTER 2

## MISSION, CAPABILITIES, AND EMPLOYMENT

**5. Mission**

a. The ordnance ammunition company is designed to establish and operate an ammunition depot or one or two ammunition supply points (ASP's) for the receipt, storage, maintenance, and issue of conventional ammunition in support of troop units in a theater of operation. The unit mission includes class V support and assistance of a nontactical nature to combat units in the forward position of a combat area.

b. Specialized detachments of other Ordnance units may be attached to the company as necessary to accomplish specific missions. For diagrams showing types of organization for class V service in the combat area and communications zone (COMMZ), see FM 9-5.

**6. Assignment and Basis of Allocation**

a. *Assignment.* This ammunition company normally is assigned to a field army or to a COMMZ logistical command. However, it may also be assigned to a separate corps or task force, depending upon local requirements.

b. *Attachment.* It normally is attached to an Ordnance Ammunition Battalion (TOE 9-86) for control, administration, and guidance.

c. *Basis of Allocation.* The number of ammunition companies required in a theater of operations will be determined by the tactical situation, the theater day of supply, and the number of lifts required, by ordnance ammunition companies in the theater, to move the ammunition from where it enters the theater to where it is issued to using units. The number of lifts is dependent upon the modes of transportation, supply levels, segregation problems, frequency of displacement of installations, length of supply lines—so far as it determines the size and frequency of shipments—and routing of ammunition through specified areas.

**7. Capabilities**

a. *Full Strength.* At full strength, the total lift capability of the company is approximately 1200 short tons of conventional ammunition per day. (Examples of lifts are: movement from rail car to truck to storage stack, and

segregation area to truck.) See FM 9-5 for a more detailed explanation of "lift."

b. *Increased Capability.* The lift capacity can be increased considerably when augmented by local labor and/or troops. When computing the personnel required to augment the company, the estimate should be based on the following formula: One man is capable of lifting approximately one-half ton of conventional ammunition per hour during a 10-hour working day.

c. *Reduced Strength.* At reduced strength, as depicted in TOE 9-17D, this unit has a total lift capability of 900 tons of conventional ammunition per day.

d. *Type "B" Organization.* The type "B" TOE 9-17D adapts this unit to a lesser requirement of U.S. military personnel. The total lift capability will be the same as for full strength if equivalent skills are available locally in sufficient quantities to offset the reduction in trained military personnel. Ordinarily, a loss in production (approximately 25 percent) can be expected during the transition and training period.

(1) Type "B" organization can be utilized only when authorized by a Department of the Army or a theater commander.

(2) If sufficient interpreters and translators are not available in the unit, additional personnel will be provided from TOE 30-600.

e. *Self-Sufficiency.* The company is operationally self-sufficient for administration, mess, unit supply, and organizational maintenance.

f. *Mobility.* The organic vehicles of the company can move 65 percent of the organizational equipment and personnel at one time. This mobility does not include supplies of ammunition on hand at time of movement. Nonorganic transportation will be required to move the company in one lift.

(1) Nonorganic transportation requirements are based on ammunition tonnages on hand at time of displacement plus the necessary vehicles to trans-

port the remaining 35 percent of troops and equipment.

(2) Appendix II, Loading Plan, outlines a sample plan for loading troops and equipment.

(3) If the anticipated move is to be conducted by leapfrogging, nonorganic transportation will not be necessary.

*g. Renovation and Reconditioning.* Operations involving renovating and reconditioning are performed on items of conventional ammunition stored in the unit. High density missiles of the SS-10, SS-11 type, etc., which may be stored by the company, will require personnel with sufficient skills in handling and reconditioning such ammunition.

*h. Separate ASP's.* The company is so organized that it can operate two separate ASP's simultaneously with no decrease in total capability. Sufficient personnel and equipment must be dispatched from company headquarters, the operations section, and the service platoon to make the detached ASP virtually self-sufficient. Details of this type of operation will be discussed elsewhere in this manual.

## 8. Employment

*a. Communications Zone.* When operating in the COMMZ, ammunition companies will be employed to establish and operate ammunition supply depots for the receipt, storage, segregation, renovation, reconditioning, and issue of all types of conventional ammunition for the support of the combat zone. Ammunition companies in the COMMZ will also furnish ammunition support to local units. One or more TOE 9-17D companies can be employed to operate each depot. Depots will be dispersed to afford maximum dispersion of stocks and still furnish maximum service to supported units.

*b. Combat Zone.* When operating in a forward area of the combat zone, ammunition companies are designed to establish two separate ASP's for the issue of conventional ammunition to division and nondivisional units.

*c. Army Service Area.* Operation in the army service area is basically the same as for the COMMZ.

*d. Defense.* Individuals of this company can fight as infantrymen when required to protect the unit against enemy attack.

## CHAPTER 3

### ORGANIZATION, FUNCTIONS, AND EQUIPMENT

#### Section I. ORGANIZATION AND FUNCTIONS

##### 9. General

The company has five basic elements—company headquarters, operations section, service platoon, and two magazine platoons. The organization of the ammunition company is shown in figure 1.

##### 10. Company Headquarters

The company headquarters provides the command element and overhead personnel for unit administration, food service, organizational supply, communications, and security. Company headquarters is under the direct command of the company commander.

*a. Unit Administration.* The unit administration element is responsible for—

- (1) Maintaining personnel records—including service records, morning reports, duty rosters, and other routine reports pertaining to administration.
- (2) Maintaining files of correspondence, and administrative and training publications.
- (3) Preparing programs and schedules for the military and technical training of the organization.
- (4) Conducting inspections of all administrative activities of the organization.
- (5) Preparing plans for changes in the company's location. Such changes usually will be initiated by higher headquarters; however, detailed planning such as messing arrangements, vehicle loading schedules, policing of sites, selecting and preparing new sites, and conducting motor marches is the responsibility of company headquarters.

*b. Food Service.* The food service element is responsible for obtaining, transporting, preparing, and serving rations to individuals of the unit and attached personnel (AR 30-11).

*c. Organizational Supply.* The functions of the company supply element are performed by the supply sergeant, with the assistance of the company armorer. On exchange days, or when

large turn-ins or issues are made, it may be necessary to detail additional individuals to assist the company supply personnel. The organization supply facility is responsible for (AR 735-35)—

- (1) Assuring that all equipment authorized by TOE 9-17D is either on hand or on requisition.
- (2) Maintaining the unit property book and a file of all necessary transaction documents pertaining thereto, unless such records are maintained by a battalion property book officer.
- (3) Maintaining all records of individual clothing and equipment.
- (4) Preparing requisitions for organizational and individual equipment.

*d. Communications.* Communication between the ordnance ammunition company and higher headquarters is by telephone, teletypewriter, and radio. Internal communications are primarily by telephone and radio. Radios are provided for communications between the company headquarters and the magazine platoon that is operating separately. The company command post is located at one of the platoon areas. The telephone and teletypewriter systems are tied into the army area signal system established by the Signal Corps. Detailed information on signal communications within the company is in chapter 8. Sufficient personnel are provided to operate communications equipment on a 24-hour basis. An effective system of messengers also must be established between activities of the unit and higher headquarters to insure communications when other means are interrupted, not available, or the matter to be transmitted is of a nature that must be hand carried. The communications element is responsible for—

- (1) Installing and operating telephone and teletypewriter communications equipment at unit installations.
- (2) Advising the communications center serving the unit of anticipated changes in communications require-

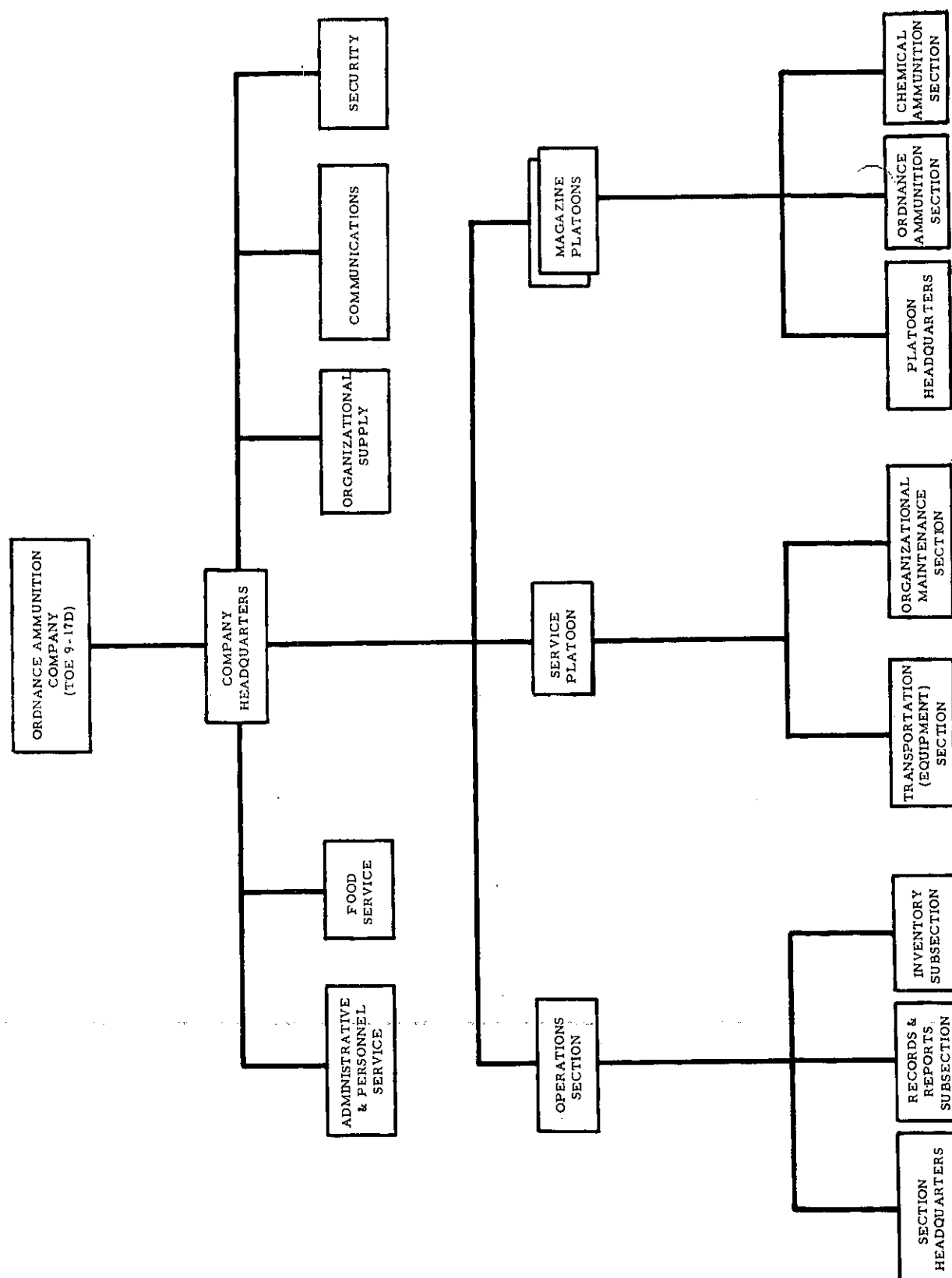


Figure 1. A type functional organization of an ordnance ammunition company (TOE 9-17D).



ments. This is of particular importance in the event of movement.

- (3) Installing communications lines within the ammunition installation.
- (4) Maintaining organic signal communication equipment.

*e. Security.* The security element is responsible for the following:

- (1) Maintaining a guard alarm system to be used in the event of fire, enemy ground and air attacks—including guided missiles, CBR attack, and guerrilla action—sabotage, pilferage, or entrance into the area by unauthorized personnel.
- (2) Directing traffic, including rail traffic, within the installation.
- (3) Furnishing guides within the installation.

## 11. Operations Section

The operations section is responsible for maintaining records and preparing reports on all ammunition in the custody of the company, for planning and supervising the layout of installations, and for controlling and coordinating the activities of the service platoon and magazine platoons. This section may be subdivided into three elements—section headquarters, records and reports subsection, and inventory subsection—that have the following functions and responsibilities:

*a. Section Headquarters.* The section headquarters is the control and supervisory element of the operations section. It is responsible for—

- (1) Preparing plans to insure efficient operation in connection with initial stockage, replenishment, issue, and inspection, and the disposition of ammunition (both live and inert) returned by supported units.
- (2) Supervising and coordinating the activities of the service platoon and magazine platoons.
- (3) Maintaining a layout chart of the storage areas and a situation map showing the location of the installation, the locations of higher headquarters and supported units.
- (4) Notifying the proper authority when shortages begin to develop so that prompt measures may be taken to prevent them from becoming critical.

- (5) Supervising and controlling the activities of personnel assigned to the section.

- (6) Arranging for auxiliary labor when required, and for labor and equipment details to assist in the operation of ammunition sites.

*b. Records and Reports Subsection.* The records and reports subsection maintains all records pertaining to ammunition under the control of the unit. Among the responsibilities of the subsection are the following:

- (1) Maintaining a record of ammunition in stock by location, Federal stock number, and lot number and, when applicable, a record of lot numbers issued to supported units.
- (2) Receiving transportation orders, checking them against records of availability, and immediately reporting the unavailability of any item to the proper authority.
- (3) Recommending substitutions whenever a requested item is not available.
- (4) Preparing ammunition shipping documents, when required, and initiating requests for transportation when necessary.
- (5) Processing incoming ammunition shipping documents and initiating follow-up action on overdue incoming shipments.
- (6) Preparing ammunition stock status reports as directed. In active situations, this report normally will be rendered daily.

*c. Inventory Subsection.* The inventory subsection is responsible for all adjustments of records relating to stocks of ammunition on hand. In accomplishing this mission, the subsection is responsible for—

- (1) Establishing inventory control schedules and announcing cutoff dates to storage.
- (2) Preparing inventory slips, verifying counts against balances shown on stock records, and making adjustments when necessary.
- (3) Ordering special inventories in the event of depot refusals.
- (4) Arranging for and organizing inventory teams during the inventory cycle.



- (5) Preparing appropriate reports on ammunition lost, damaged, or destroyed.
- (6) Reporting discrepancies and preparing inventory adjustment reports or other reports concerning ammunition excesses or shortages as revealed by an inventory.

## 12. Service Platoon

The service platoon contains the bulk of the materials handling equipment and service personnel (equipment operators, drivers, mechanics, painters, and packing and crating specialists) required to receive, store, segregate, and issue conventional ammunition. This platoon also performs organizational maintenance on materials handling equipment and wheeled vehicles of the company. Recommended subdivisions and the functions of each are as follows:

*a. Transportation (Equipment) Section.* The transportation section (sometimes referred to as the equipment section) furnishes wheeled vehicles, firefighting equipment, and materials handling equipment, and operators, in support of depot or ASP operations. This section is responsible for the following:

- (1) Maintaining all maintenance records pertaining to organic wheeled vehicles, materials handling equipment, and engineer equipment within the company; and scheduling periodic maintenance services for this equipment.
- (2) Dispatching wheeled vehicles, cranes, bulldozers, and motor-driven materials handling equipment.
- (3) Transporting organizational equipment, personnel, and supplies.
- (4) Operating firefighting equipment and providing water for firefighting within the installation.
- (5) Providing equipment and operators for minor maintenance of roads, erection of barricades, preparation of storage sites, and assistance in the maintenance of firebreaks.

*b. Organizational Maintenance Section.* The organizational maintenance section is responsible for the operational effectiveness of all organic power-driven equipment and associated trailers. It is charged with the following functions:

- (1) Performing organizational maintenance on power-driven equipment as prescribed in TM 9-2810.
- (2) Conducting systematic and periodic inspection of equipment and taking corrective action to prevent failures (TM 9-2810).
- (3) Training drivers and equipment operators in the proper use of equipment and in the performance of preventive maintenance.
- (4) Assuring that authorized quantities of tools and repair parts are on hand to maintain equipment at the organizational maintenance level.
- (5) Assuring that repair of equipment is not attempted by unqualified personnel or with the use of improper or inadequate tools.

*c. Other Functions.* In addition to the sections indicated above, the service platoon provides the personnel required for general carpentry work and painting, and to perform work on ammunition containers to prevent deterioration and to correct minor defects. The following functions are performed:

- (1) Operating a carpenter shop for the fabrication of boxes, pallets, signs, and other wooden items.
- (2) Packaging ammunition for shipment.
- (3) Repairing ammunition containers, including repainting and stenciling when required.
- (4) Performing miscellaneous carpentry and minor construction as directed.

## 13. Magazine Platoons

There are two identical magazine platoons in the company. Each platoon contains the personnel required for handling operations (less materials handling equipment and operators) incident to the receipt, storage, segregation, and issue of conventional ammunition. These platoons also monitor, maintain, and inventory stocks. Each platoon is organized to operate as an independent unit. The platoons may be augmented as the situation demands.

*a. Platoon Headquarters.* The platoon headquarters is the supervisory elements of the platoon and is responsible for—

- (1) Supervising, controlling, and directing the operation of the platoon.

- (2) Laying out magazine areas to provide the necessary sections and stacks in the proper locations to facilitate storage and issue.
- (3) Inspecting ammunition in storage, paying particular attention to deterioration, violation of storage procedures, and fire hazards.
- (4) Training personnel assigned to the platoon.

*b. Magazine Section.* Each magazine section is organized to provide maximum flexibility with the personnel required to perform all of the handling operations necessary for the receipt, segregation, storage, maintenance, and issue of ammunition. They can function independently in the operation of small ASP's or in separate areas within a large installation. In addition to the above, each magazine section should be prepared to perform the following:

- (1) Clear, level, and ditch stack sites.

- (2) Assist in the maintenance of fire-breaks and in firefighting when required.
- (3) Supervise attached labor (military and civilian).
- (4) Assure that ammunition is stored in accordance with the storage plan.
- (5) Assure that ammunition is properly segregated according to type, caliber, and lot number.
- (6) Perform in-storage maintenance of ammunition when required (ammunition maintenance, inspection, and surveillance are discussed in detail in FM 9-5).

*c. Chemical Ammunition Section.* The functions of the chemical ammunition section are the same as those of the magazine section, except that it handles toxic, chemical-filled ammunition, and assists in handling conventional ammunition when not otherwise employed.

## Section II. EQUIPMENT

### 14. General

In addition to the equipment common to most companies (mess equipment, administrative vehicles, office equipment, etc.), the ordnance ammunition company has much specialized organizational equipment necessary to accomplish its mission. These specialized items consist of forklift trucks, handtrucks, gravity roller conveyors, bulldozers, cranes, and flood-light sets. A brief discussion of these items follows:

#### *a. Forklift Truck.*

- (1) *Description.* The forklift truck provided by TOE 9-17D is a gasoline-powered, pneumatic-tired, rough terrain, four-wheeled automotive unit that enables one man to pick up a unit load, carry it to its destination, and stack it. The truck is 90 inches high, 204 inches long, 86 inches wide, and weighs 17,000 pounds. The size of this forklift demands that it be placed on a low-bed semitrailer for long distance moves.
- (2) *Capacity.* The forklift has a lift capability of 6,000 pounds of palletized ammunition. With adaption kits, it can lift an equal weight of items that,

because of their size or shape, cannot be palletized.

#### *b. Handtruck.*

- (1) *Description.* The handtruck provided by TOE 9-17D is a two-wheeled, general utility type truck that is 52 inches long and 18 inches wide. A steel nose iron is attached to the lower end of the frame to aid in picking up and supporting the load.
- (2) *Capacity.* The handtruck has a maximum capacity of 600 pounds.
- (3) *Use.* The handtruck is used chiefly for transporting single cases of ammunition over short distances within an ASP area. It is used to best advantage when operated in connection with the powered equipment to move items that, because of their size, shape, and amount, do not require the use of power equipment.

#### *c. Gravity Roller Conveyor.*

- (1) *Description.* The gravity roller conveyor is a continuous platform of evenly spaced rollers that turn freely in the frame of the platform. The rollers are placed above the frame so that boxes wider than the conveyor

can be moved. The roller conveyor is a simple device on which boxes can be moved downgrade, pushed on the level, or pushed upgrade. When rolling boxes downgrade, a fall of 3 inches in each 10-foot section is usually sufficient to overcome the friction in the roller bearings. The gravity roller conveyor provided by TOE 9-17D consists of 10-foot straight lengths that are 16 inches wide, 45° curved sections also 16 inches wide, and supports, which adjust in height from 24 inches to 40 inches.

- (2) *Capacity.* The capacity will depend upon the number of conveyor units installed.
- (3) *Use.* Each magazine platoon normally will have 30, 10-foot sections, 2, 45° curved sections, and 60 supports. The conveyors normally are used within an ASP to load and off-load single boxes of ammunition in a very short time. The quantities mentioned above can easily be carried on one 2½-ton cargo truck.

*d. Tractor, Full-Track.*

- (1) *Description.* This piece of equipment is powered by a 6-cylinder, 4-cycle, diesel engine. It weighs 40,350 pounds, is 92 inches high, 113 inches wide, and 207½ inches long. Extra equipment includes an armored cab for the protection of operating personnel engaged in isolating burning ammunition, a bulldozer for earth moving and clearing, a mine laying scoop, a winch, and a power control unit. Each of the two tractors authorized can be transported on one assigned lowbed semi-trailer. Normally, one tractor will be assigned to each magazine platoon.
- (2) *Use.* The tractor, with its accessories, can be used to construct revetments, build road networks, construct fire-breaks, fight fires, remove boulders, pull out trees, and dig out stumps.

*e. Crane-Shovel, Truck Mounted.*

- (1) *Description.* The two truck mounted crane-shovels are gasoline driven. Each consists of a rotating base, deck machinery, an operator's cab, and a

carrier, which is driven by the crane operator. When in the travel position, the carrier cab can accommodate only the driver due to the boom riding adjacent to it. The carrier has a maximum road speed of 30 miles per hour.

- (2) *Capabilities.* Refer to TM 5-3810-203-10 for detailed capabilities of this piece of equipment.
- (3) *Use.* The crane boom is used for lifting and swinging heavy loads such as large crates.

*f. Floodlight Set.*

- (1) *Description.* The major component of this portable floodlight set is the 5-kilowatt electric generator. It has a rated output of 5,000 watts of alternating current at 120 to 208 volts. It is an integral, gasoline-engine-driven power plant. The entire assembly is skid-mounted, self-contained, and requires no special installation for operation. These generators may be mounted on 1½-ton cargo trailers; however, in the loading plan (app. II) they are transported on the 5-ton cargo trucks. There are six floodlights mounted on masts to complete the set.
- (2) *Use.* One floodlight set is used by each magazine platoon to light the ASP area during night operations.

## 15. Distribution

Distribution of equipment to all components of the ordnance ammunition company is provided for in TOE 9-17D; however, the equipment may be redistributed at the discretion of the unit commander.

## 16. Additional Items

In special situations, items not included in the equipment authorization tables (e.g., additional trucks, cranes, etc.), but which are vital to the company's mission, may be obtained, with the approval of higher authority.

## 17. Vehicles

Vehicles authorized in the TOE are provided for transporting personnel and organic equipment. Appendix II contains a complete list of vehicles. During ASP operations, they are used as intra-installation transportation in the con-

solidating and sorting of ammunition to facilitate the handling of issues. Transportation for the movement of stocks of ammunition to and from ASP's must be provided the Transportation Corps.

## 18. Maintenance

*a. Responsibility.* The commander of the ordnance ammunition company is responsible for the maintenance of all company equipment. He will insure that maintenance instructions and procedures are complied with.

*b. Organizational Maintenance.* Organizational maintenance is the maintenance performed by the using organization on its own equipment. The company is authorized neither trained personnel nor tools for the performance of other than first and second echelon maintenance. Second echelon maintenance will be

performed by mechanics of the company's service platoon.

*c. Field and Depot Maintenance.* Field or depot maintenance of organizational equipment will not be undertaken by personnel of the company. The company commander will make arrangements for this support through the headquarters to which the company is assigned or attached.

*d. Repair Parts and Tools.* Authorized quantities of parts and tools for the company are procured with the initial supply of equipment. Company personnel will maintain the authorized amounts by submitting requests for replacements to the designated supplying organization.

*e. Records.* The records prescribed in TM 9-2810 and AR 711-16 will be maintained by the company.

## CHAPTER 4

### DUTIES OF PERSONNEL

---

#### 19. General

Because of the varied operations in which an ordnance ammunition company may be engaged, each person in the company should be familiar with the duties of his immediate supervisor. Also, the company may, at times, be augmented by auxiliary labor, at which time enlisted personnel ordinarily in nonsupervisory positions will serve as supervisors.

a. All officers of the company are subject to assignment as commanders of elements of the company employed on special missions remote from the company. Consequently, to avoid interruptions in company operations, each officer should acquaint himself with the overall operation of the unit in order to take command of a detached element on short notice.

b. Although administrative matters may be handled by the company headquarters, a detached element commander must be prepared to assume these responsibilities, as well as the duties of operations officer, magazine platoon leader, mess officer, etc. Since orders and information concerning ammunition handling frequently come directly from higher headquarters to a detached element commander, rather than through the company commander, the element commander must be prepared to act on his own initiative.

#### 20. Company Headquarters

a. *Company Commander.* The company commander is responsible for everything his company does or fails to do. This responsibility cannot be delegated; however, it can be discharged through an established chain of command. He is charged with the successful operation of the company mission. He is responsible for the training, discipline, control, administration, and welfare of the company and for all aspects of its performance in garrison and under combat conditions. He actively supervises the performance of those under his command and takes positive action to correct any deficiencies. He strives to develop in his subordinate leaders such qualities as initiative, self-reliance, ingenuity, and professional competence

by furnishing sound guidance and allowing them maximum freedom of action in accomplishing their assigned tasks. When a situation exists that is beyond the capability of the company, he requests guidance and necessary assistance from higher headquarters. He must maintain continuous contact with higher headquarters on all matters pertaining to the mission and operations of the company.

b. *First Sergeant.* The first sergeant is the principal enlisted assistant to the company commander. He assists the company commander in the performance of the company's administrative duties. He is directly responsible for the operation of the company orderly room and is assisted in this duty by the company clerk and the personnel administration clerk. He performs all duties incidental to unit administration including keeping the duty rosters and a suspense file system. In addition to the above duties he also—

- (1) Recommends to the company commander on such items as appointments, reductions, assignments, and disciplinary matters as they pertain to the enlisted member of the company.
- (2) Supervises and assigns work to the clerks, messengers, drivers, and communications and security personnel.
- (3) Supervises and arranges for the internal security and defense of the company in accordance with the company commander's plans.

c. *Mess Steward.* The mess steward is responsible for the operation of the company mess. He supervises the food service personnel and plans the efficient use of available facilities to provide for any type operation. When the company is working on a 24-hour basis, he must make satisfactory messing arrangements for serving more than three meals a day. In an ammunition company, normal operation involves the establishment of two separate ASP's; therefore, the mess steward must be fully cognizant of the proper method of ration breakdown so that both ASP's will get their proportionate share of rations. In addition, the



mess steward requisitions and draws rations, supervises the preparation and serving of meals, keeps mess records and mess accounts, is responsible for the proper care and maintenance of mess equipment and property, supervises the cooks and cook's helper, and supervises the men detailed on kitchen police.

*d. Supply Sergeant.* The supply sergeant is responsible for requisitioning, receiving, storing, issuing, turning in, and accounting for all TOE and TA items authorized in the company. He operates the unit supply and maintains all transaction records incident to the efficient operation of the supply. The armorer assists the supply sergeant in the discharge of his many duties. He must also take necessary measures to safeguard the property stored in unit supply from fire, weather, rust, mildew, rodents, vermin, etc. He must keep the company commander fully aware, at all times, of all property—expendable and nonexpendable—needed by the company. A very important facet of his duties is the receiving, checking, and recording, in the presence of an officer, all Government and private property of men not present for duty in the company (AWOL's, deserters, men in hospital, men in confinement, on leave, TDY, etc.).

*e. Radio-Teletypewriter Team Chiefs.* These two men are responsible for the operation and maintenance of the company radio-teletypewriter facilities. Each team chief, with two radio-teletypewriter operators, furnishes the communications necessary for the operation of two ASP's on a 24-hour basis. The team chief supervises the setting up and operation of the radio-teletypewriter equipment in tactical and administrative nets, processes incoming and outgoing messages in proper format, encodes and decodes messages by using cryptographic devices; supervises the cleaning, minor adjustments and replacement of parts necessary to properly maintain the equipment; prepares and disseminates work schedules, operational procedures, and instructions; checks the operational log, maintenance schedules, and files for completeness and accuracy; and requisitions supplies through the unit supply sergeant. In addition, the team chief may also be responsible for the switchboard operator and the wireman assigned to the ASP.

*f. Armorer.* The armorer is responsible for the second echelon maintenance of all weapons

assigned to the company by TOE or TA. He is responsible for safeguarding the weapons in the arms room, for accounting for weapons by serial number, for drawing and safeguarding necessary ammunition, for modifying assigned weapons in accordance with organizational modification work orders and prepares necessary work requests for those modifications that are beyond his capability or authority to perform. He also requisitions, receives, maintains records, and stores organizational repair parts required for the timely maintenance of individual and organizational small arms. He is the principal assistant to the supply sergeant and must be fully aware of all activities of the unit supply function.

*g. Company Clerk.* Assists the first sergeant in his administrative duties in the operation of the company orderly room. He must be cognizant of all phases of company administration and must be able to assume all administrative functions in the absence of the first sergeant. He types all correspondence, company directives, duty rosters, and morning reports. He must be familiar with administrative regulations and procedures, and must be familiar with the proper methods of filing regulations, posting changes thereto, and filing correspondence, directives, etc., promptly and accurately.

*h. Personnel Administration Clerk.* The primary function of the personnel administration clerk is to assist the first sergeant in the discharge of his duties by maintaining the personnel records of all personnel assigned to the company. He types all personnel forms and correspondence peculiar to his assigned duties and must establish and maintain the files necessary for his activity. His normal place of duty will be where the service records and pay vouchers are kept and maintained.

*i. Senior Ammunition Guard.* There are two assigned to the ammunition company. One senior ammunition guard normally will be assigned to each magazine platoon. They are responsible for the internal security of the ASP's and supervise the regularly assigned ammunition guards, along with security personnel provided from sources other than company assigned strength.

*j. Senior Switchboard Operator.* Responsible for the operation of the company telephonic communications network, for laying and main-

taining the necessary wire, and for maintaining the equipment. He normally will work in conjunction with the radio-teletypewriter teams in each ASP for 24-hour operation. When operating in an ammunition depot, the senior switchboard operator plus the switchboard operator and the wireman can readily operate on a 24-hour basis without the assistance of the radio-teletypewriter team.

## 21. Operations Section

*a. Operations Officer.* He is responsible to the company commander for the efficient and effective management of ammunition supply operations according to the company mission. He establishes policies and directives necessary to accomplish the mission of the section, acts for the company commander during his absence, performs duties as the company executive officer, and prepares and executes area defense plans including planned destruction of ammunition stocks in the event capture is imminent. In addition, he—

- (1) Is responsible for the layout of the ASP's or depot and for all ammunition handling activities therein.
- (2) Exercises supervision over the magazine platoon leaders on all matters related to the operation of the ASP's.
- (3) Is responsible for the prompt and efficient coordination of all incoming and outgoing shipments of ammunition.
- (4) Must be continually cognizant of situations requiring actions or decisions of higher headquarters, such as shortages of particular types of ammunition, or requests from combat units for abnormally large quantities of ammunition.

*b. Ammunition Supply Officer.* This officer assists the operations officer in his assigned duties. In the absence of the operations officer, he assumes full responsibilities for the operation section. When the company is augmented by non-United States personnel, he is directly responsible for their effective utilization. The ammunition supply officer also supervises the receipt, classification, and issue of ammunition; supervises the Ammunition Reliability Evaluation Program (AREP) to determine the serviceability of ammunition; recommends evacuation, utilization, reconditioning, or demolition of damaged, abandoned, or captured ammuni-

tion; supervises the inspection of reconditioned or modified ammunition to ascertain that the condition of the items is in accordance with reconditioning or modification specifications, and combat serviceability standards; advises the operations officer in the stock accounting, inspection, and inventory phases of his duties.

*c. Chief Ammunition Clerk.* Supervises the enlisted personnel assigned to the operations section. He assists the operations officer in the selection of sites and layout of ammunition storage areas. He advises the magazine platoon leaders on the principles of storage and warehousing as applied to ammunition supply.

*d. Assistant Chief Ammunition Clerk.* Assists the chief ammunition clerk in the performance of his assigned duties. He is utilized as the chief assistant to the ammunition supply officer as the immediate supervisor of the enlisted personnel when operating on a 24-hour basis. He also assists in the supervision of non-United States labor when the company is augmented by such personnel. He must be fully cognizant of all phases of ammunition supply to effectively discharge his assigned duties.

*e. Senior Ammunition Records Clerk.* He is directly responsible for establishing and maintaining all the records necessary for the control of ammunition stocks. He also prepares requisitions for the replenishment of ammunition stock issued.

*f. Ammunition Storage Inspectors.* They assist in the layout of the ammunition storage areas and perform in-storage inspections to insure that adequate preservation measures are in effect. They must ascertain that the ammunition is properly segregated as to type, lot number, etc., and that quantity distance tables are adhered to. There are two ammunition inspectors assigned to the company, and normally one is assigned to each ASP when the company operates in two locations.

*g. Clerk Typists.* There are two clerk typists assigned to the operation section of the ammunition company. Normally, they are assigned one to each ASP for typing correspondence, reports, and transportation orders for the ASP.

*h. Inventory Clerks.* There are two inventory clerks assigned to perform inventory duties of ammunition in storage, either as scheduled or when directed. They may be assigned other duties as deemed necessary when not conducting inventories.



*i. Stock Records Clerk.* He assists the ammunition records clerk by posting and maintaining the stock record cards reflecting receipts and issues. He may also assist in compiling statistical data as required.

## 22. Service Platoon

*a. Maintenance Officer.* Serves as the service platoon leader and in this capacity he directs and supervises the activities within the platoon. With the concurrence of the company commander, he assigns and coordinates the effective utilization of the platoon equipment and services as directed by the operations officer. In his capacity as maintenance officer, he is directly responsible for the serviceability of company vehicles and other power-operated equipment and assures that they are utilized efficiently and are properly maintained. He is responsible for the timely collection and filing of maintenance information, publications, reports, and directives pertaining to his activity.

*b. Platoon Sergeant.* Supervises the enlisted personnel assigned to the platoon. He is responsible for timely coordination with other sections of the company regarding utilization of equipment and services as directed by the maintenance officer; he is also responsible for the proper assignment, scheduling, and manpower utilization. He is the chief assistant to the maintenance officer in the discharge of his assigned duties and operates the company motor pool in accordance with TM 9-2810.

*c. Dispatch Control Clerk.* He is responsible for dispatching all vehicles and equipment assigned to the company. He maintains all necessary forms and records required in connection with the dispatching of vehicles and equipment. He schedules vehicles and equipment for maintenance and must keep current all reports and forms connected therewith.

*d. Tractor Operators.* There are two tractor operators assigned to the company. Normally, one is assigned to each ASP to assist in the construction of the sites. The operators must be extremely proficient in the many varied uses of their equipment. As an example, they must know how to dig around a tree stump, be able to cut the roots with the bulldozer blade, and remove the stump with a minimum workload placed upon the equipment. These operators may be utilized as deemed necessary when not actively engaged in operating their equipment.

*e. Crane Operators.* There are two crane operators assigned to the ammunition company and they normally are assigned one to each magazine platoon. They perform the duties associated with the operation of the equipment, but may be utilized to augment other sections when their equipment is not being used. They must be fully aware of the capabilities of their equipment so that accurate and timely recommendations on the movement of ammunition may be offered to the magazine platoon leader if called upon to do so.

*f. Wrecker Operators and Forklift Operators.* There are two wrecker operators and four forklift operators assigned to the ammunition company. Normally, they are assigned equally to the magazine platoons but may be retained under the direct control of the maintenance officer for more efficient utilization. When not operating their assigned equipment, these operators may be utilized in other tasks commensurate with their rating and ability.

*g. Engineer Equipment Mechanics.* There are two assigned to the company to perform the organizational maintenance on the assigned engineer equipment.

*h. Packing and Crating Specialists.* Four are assigned to the company to construct and repair boxes, crates, pallets, signs and similar items used in the company. These men normally will work under the direction of the maintenance officer for the construction portion of their assigned mission, but to eliminate unnecessary movement of damaged boxes, crates, or pallets, it is more desirable to transport the men to the site with the necessary equipment to perform the job.

*i. Painters.* There are two painters assigned to the ammunition company to perform all the necessary painting and stenciling duties connected with the reconditioning of ammunition, boxes, crates, and signs. When not actively engaged in their primary duty, these men can be utilized to supplement the assigned ammunition guards or to perform such other duties as the maintenance officer may direct.

## 23. Magazine Platoon

*a. Platoon Leaders.* These officers are responsible for the supervision, control, and operation of the platoons. They receive orders and directives from the operations officer (as far as the operations of the platoons are concerned)

and are responsible for strict compliance with these orders and directives. They must be able to make timely and accurate determinations of labor, transportation, and equipment requirements of the platoons and make these requirements known to the operations officer. They insure that all safety regulations are complied with and are responsible for the storage of ammunition in accordance with the accepted storage plan. They are directly responsible for the ammunition received and stored within their ammunition supply areas. They are assisted in the performance of their duties by the platoon sergeants and other enlisted personnel assigned to the platoons.

*b. Platoon Sergeants.* The platoon sergeants must be fully aware of all activities of the platoons so that prompt and accurate recommendations may be offered to the platoon leaders when necessary. They are responsible to the platoon leaders for the direct supervision and effective utilization of the assigned enlisted personnel.

*c. Assistant Platoon Sergeants.* The primary function of the assistant platoon sergeants is to assist the platoon sergeants in the perform-

ance of their duties. When circumstances require it, they may assume leadership of a storage section. They direct the activities of the ammunition storage inspectors and directly supervise non-United States personnel when they are organized into storage groups.

*d. Ammunition Storage Inspectors.* There is one ammunition storage inspector assigned to each magazine platoon. They conduct inspections of the storage areas to assure that safety regulations are met and that safety practices prevail at all times. They inspect the ammunition in storage for serviceability, proper stacking, proper segregation, and the adequacy of the containers, pallets, and signs. They make prompt recommendations for the correction of any deficiencies noted. By assuring that the aforementioned practices are complied with, the ammunition storage inspectors can do much to assure the smooth operation of storage areas.

*e. Chemical Ammunition Storage Specialists.* These specialists are directly responsible to the platoon leaders for the proper identification, handling, and storage of all chemical-type ammunition items issued by the company.

## CHAPTER 5

### OPERATIONS

---

#### Section I. COMMUNICATIONS ZONE

##### 24. General

Operations in the COMMZ differ from those in the combat zone in that the company usually is employed in a depot, in conjunction with other ammunition companies or augmented by civilian labor. The company may be employed in a battalion-type operation, or as a unit solely responsible for an entire depot operation. To accommodate varying situations, the unit commander may find it necessary to reorganize his unit completely to utilize personnel more effectively (FM 9-1 and FM 9-5).

##### 25. Storage

Depots in rear areas store ammunition in large quantities and, although daily issues and receipts may be large, they are small compared with the total tonnages stored. Ammunition may be stored for long periods of time prior to issue. In large depots, some slow-moving items might remain in storage as long as the depot stays in operation; consequently, storage principles for a depot should be based upon this small rate of turnover in regard to dunnage and protection.

##### 26. Receipts

Receipts at rear depots usually will be large and much of the ammunition received will be in mixed lots. Many depots receive ammunition directly from incoming ships, the ammunition being transported to the depot on truck or rail. In many cases, because of the limited time normally available for unloading ships, the integrity of ammunition lots is not maintained. Representatives of the receiving depot should always be at the terminal to assist in this supervision of the unloading. This will do much to maintain lot integrity and reduce the segregation workload. During peak operations, a sorting area may be needed to separate the various lots. After sorting, organic transportation must be used to move this ammunition to the storage area. If ammunition is received from another ammunition depot or from an in-

stallation employing trained ammunition personnel, the difficulties encountered due to mixed ammunition lots will be negligible, especially if proper liaison is established with the shipper. Every effort should be made to reduce the amount of mixed ammunition coming in, since sorting and restacking is a tedious, time-consuming job. Excessive time or effort expended on this task reduces the efficiency of the unit.

##### 27. Issues

Shipments from COMMZ depots normally will be larger than those from an ASP. A shipping document rarely will call for less than one truckload of any given item. Shipments usually are directed by higher headquarters and the volume of shipments from any one depot usually is fairly constant due to staff planning at higher level. Under most conditions, it may be possible to plan on shipping a definite quantity each day, particularly the types of artillery ammunition for which there is an almost constant demand.

##### 28. Auxiliary Labor

In many COMMZ installations, additional labor will be needed for efficient operation. This labor force may consist of local labor, or foreign military or quasi-military service troops. Also, local labor may be integrated into a type "B" TOE unit in which United States personnel are serving only in a supervisory capacity. Many factors determine whether or not auxiliary labor will be available when and where required. However, maximum use should be made of local labor available and when authorized. It may be necessary to provide food, clothing, transportation, tools, and wages for the individual workers. Liaison with local governmental agencies or Civil Affairs units in the case of occupied territory, will aid in solving most of the problems encountered in the acquisition of auxiliary labor.

## 29. Equipment

It may be found that equipment provided in the TOE is inadequate to handle a large volume of ammunition within a COMMZ installation. This is particularly true when additional labor is utilized. In such cases, it is necessary that additional equipment be authorized and requisitioned.

## 30. Renovation

Renovation of ammunition normally is per-

formed by specialized personnel in units organized for this purpose. Renovation programs usually are instituted in large ammunition depots in the COMMZ; therefore, plans must be made to provide personnel for the receipt and storage of large quantities of unserviceable ammunition. Since renovation is hazardous work, specially constructed barricades and facilities will be required by renovation personnel. Depot planning should provide for this facility in a suitable locality.

# Section II. COMBAT ZONE

## 31. General

Operations of the ordnance ammunition company in the combat zone normally are confined to small Army depots and ASP's (FM 9-5).

## 32. Army Depots

A large portion of ammunition under the control of an Army commander will be stored in Army depots. The tonnages in these depots will vary, depending on such factors as distances to COMMZ depots, reliability of transportation, planned expenditures by combat units, and the day of supply established by higher headquarters. Certain practices in layout and operations are used in Army depots that are not applicable to COMMZ depots. Stocks are smaller, additional labor may or may not be available, long-term storage will be an exception, renovation programs will not be provided, and depots will be located close to main supply routes to eliminate unnecessary handling and afford maximum convenience to supported units.

## 33. Ammunition Supply Points (ASP)

Ammunition supply points are established primarily for issuing ammunition directly to combat troops and usually are located in the forward areas. They are smaller than depots and storage stacks are more dispersed. One ammunition company may operate two ASP's. A method of operation frequently employed, particularly in a forward moving situation, is termed "leapfrogging." Under this system, one of the two ASP's is in a receiving phase while the other is in an issuing phase. After stocks

are exhausted, the rear ASP moves forward as far as feasible and goes into a receiving phase, while the other ASP assumes responsibility for issues. The company must be capable of meeting sudden and unexpected demands and be prepared to operate the ASP's on a 24-hour basis. In addition, adequate security measures must be maintained. Additional labor and transportation may be scarce or available only for short periods of time. The company must be prepared to adapt to rapidly changing demands and operating conditions.

## 34. Ammunition Supply Point Receipts

Normally, ammunition will be received at ASP's from depots further to the rear, and usually will be in homogeneous truckloads. However, incoming trucks containing mixed loads may be encountered, especially when ammunition is being turned in by troops. Therefore, it may be advisable to establish a sorting area (FM 9-5).

## 35. Issues

In most ASP's, there will be a rapid turnover of stocks. During peak operations, much ammunition may be issued within a few minutes after it is received—sometimes directly from the vehicles resupplying the installation. Ammunition received and issued in one day may exceed the tonnage stored. Combat unit supply trains returning for resupply may bring their own men to load trucks. However, depending on the combat situation, the ASP commander must be prepared to provide labor for loading operations.



## Section III. SPECIAL OPERATIONS

**36. Amphibious Operations**

*a. General.* Tactical units participating in an amphibious operation carry such ammunition as can be carried by individuals and vehicles to be landed initially. Additional ammunition is stored in vehicles in landing craft and ships scheduled for early discharge on the beach. After beachheads are secured, phased increments of ammunition are brought ashore and beach dumps established. Later, in-shore ASP's are established and beach dumps exhausted by issues. Elements of ammunition companies should be among the first technical service troops to be landed, to provide supervisory and handling personnel for ammunition supply operations.

*b. Ammunition Supply Ships.* During the initial stages of an amphibious operation, vessels used to bring in scheduled shipments of ammunition should be loaded with balanced stocks. It is imperative that these vessels be loaded to facilitate selective discharge of ammunition, because supply ship commanders and crews usually will be reluctant to stand offshore for long periods of time during the initial phase of an operation, since they are highly vulnerable to enemy attack. Therefore, ammunition personnel should do everything practicable to expedite the unloading of these ships. Complete sorting of ammunition by type may prove impractical; however, with the use of trained personnel, a greater amount of sorting may be accomplished without an appreciable loss of time or delay in movement. Every effort should be made to keep the amount of unsorted ammunition to a minimum.

*c. Ammunition Supply Personnel.* The ammunition supply personnel participating in the initial phases of an amphibious operation must be landed as early as possible on D-day. It is desirable to have these personnel ashore by the time unloading starts in order that they may be ready to receive, segregate, and issue ammunition.

*d. Protective Measures.* Ammunition personnel must be prepared to protect themselves against snipers, infiltrators, night patrols, and guerrillas, as well as enemy aircraft, and should take all protective measures practicable.

**37. Airborne Operations**

*a.* Initially, ammunition arriving at an airhead is brought in by division units. Quantities in excess of basic loads must be collected into an airhead dump at the earliest opportunity. Ammunition personnel and vehicles are included in the supply and transport company of the support group of the airborne division.

*b.* In some cases, it may be necessary to deliver ammunition to isolated units by air drop. Care must be exercised in preparing and packaging such shipments. Ordnance officers must be prepared to render technical assistance to personnel charged with lashing cargo for air delivery.

**38. Tropical Operations**

The nature of the terrain and climatic conditions in the tropics makes the selection of storage sites for ammunition especially important. Many problems will arise that are not encountered in temperate zones. A large part of the area in the tropics may consist of steep slopes, swamps, and stream beds—all unsuitable for ammunition storage. Firm, solid ground often is difficult to find. Heavy rain may convert a level, firm area into a sea of mud. Throughout the tropics there are seasons of heavy rain. In many regions, short, heavy downpours of rain may be expected daily. Rain followed by intense sunshine combine to produce conditions of heat and humidity, which greatly accelerate the deterioration of ammunition and tend to reduce the efficiency of personnel. Ammunition stacks, unless placed on proper dunnage, will sink into the soft jungle soil. Fungus may attack cloth components such as propelling charge bags and bandoleers. Termites will eat through wooden packing boxes and fiber containers, thereby exposing the ammunition to corrosive influences. As can be seen, tropic operations increase in-storage maintenance problems. Thus, the importance of adequate dunnage, shelter, and ventilation of ammunition stored in the tropics cannot be overemphasized. Maximum use of tarps and makeshift shelters, and keeping rounds in their original containers as long as possible will materially reduce the amount of unserviceable ammunition in the tropics.

### 39. Arctic Operations

*a. General.* Ammunition operations in the Arctic are a continuing battle against terrain and the elements. Subzero weather and high winds seriously handicap the efficiency of storage personnel. In many instances, they will be able to remain outside for only short periods of time. Heavy arctic clothing, though warm, hinders their movements and causes individuals to perspire during extended handling operations; therefore, personnel should be provided with suitable shelter in the storage area where they may remove outer clothing during slack periods or between truckloadings. Otherwise, personnel may suffer from frostbite, severe colds, pneumonia, or even death. Special storage precautions are necessary to prevent condensation and the freezing of containers into the ground. Also, layout of sites must provide drainage for considerable quantities of surface water, which usually accompanies thaws. In practice, ammunition is often stored at the firing sites of units, such as air defense battalions, whose primary role is defense. When this is the case, technical assistance by ammunition company personnel becomes vitally important. Regular inspection of stocks and active aid to the using units is essential to assure serviceable ammunition stocks.

*b. Open Storage.* Ammunition stored in the open should be kept well off the ground by use of dunnage. Bottom dunnage should be designed to prevent the stack from sinking into thaw-softened ground, and should be high enough to allow water to flow under the stack without wetting the ammunition. Dunnage may be hard to get and all types of crating material should be reserved for this use. In regions where thaws occur, more dunnage must be used than normally required. Such conditions must be anticipated and plans made therefor even though the ground may be frozen solid when the installation is set up. Stacks should be covered to keep out snow and water and should be

located near roads that are solid, so that sudden rains will not isolate the stacks. During thaws and periods when there is no snow, arctic terrain normally is knee deep in tundra or scrub growth. Here, low stacks are camouflaged with paulins, scrub, or tundra.

*c. Indoor Storage.* If huts or similar shelters are used for storage, the floors must be designed for easy drainage and dunnage must be provided. Ventilation of stacks and huts must be maintained to reduce condensation.

*d. Road Construction.* If available, stone or gravel should be used liberally for construction of roads. Culverts should be provided for cross-drainage to avoid washouts during thaws, which usually will be accompanied by large quantities of surface water.

*e. Snow.* Since the operation of wheeled vehicles is impracticable where there is a deep layer of snow on the ground, ammunition will have to be transported by "over-snow" vehicles. Therefore, ASP's should be located as close as practicable to supported units. If the snow is excessively deep, supply by air may be necessary. Arrangements for such delivery (usually by air drop) may have to be made by the ammunition company.

### 40. Desert Operations

Cover rarely exists in the desert. Stacks of ammunition are conspicuous and will invite special attention from enemy reconnaissance. Roads are seldom necessary in a desert ammunition storage area. Shadows and regular shaped patterns should be avoided by the use of small irregular stacks, camouflage nets, and elimination of regulation lines and rows. Definite information as to the quantities of ammunition stored in an ASP is denied the enemy by using low, irregular stacks covered by brush or stone, or garnished to resemble bushes. In the desert, heat, sun, and flash floods will endanger ammunition; therefore, proper precautions must be taken for its protection.



## CHAPTER 6

## ESTABLISHMENT OF AN AMMUNITION INSTALLATION

## Section I. RECONNAISSANCE AND SITE SELECTION

## 41. Site Selection

a. *General.* When an ordnance ammunition company is ordered to establish an ASP or depot, the order will denote the general area in which the installation will be located. Within the limits prescribed, the unit commander selects the specific area, determines the layout that will best suit the needs of the unit, has the site prepared for occupancy, and prepares the order for the move. See FM 9-5.

b. *Factors Governing Site Selection.* When selecting the specific location for the establishment of an ammunition installation, the following factors must be considered:

- (1) *Distance to supported units.* The mission of the ordnance ammunition installation makes it necessary that it be located as conveniently as practicable, and as the tactical situation will permit, to the units it must support.
- (2) *Access by road.* Access roads must remain passable by heavily loaded trucks under all weather conditions. Alternate roads are desirable. More than one road to the source of replenishment supply and to the supported unit should be available for use when traffic is heavy or when traffic on the principal road is interrupted. A network of roads within the site is very desirable. Internal roads may be narrow and provide one-way traffic only. Large ASP's normally will require considerable road improvement and construction.
- (3) *Access by rail.* Proximity to a rail-head is desirable in sites to be developed as large ammunition supply points or depots, since large tonnages of ammunition will be shipped by rail whenever possible. The construction of rail spurs and car holding yards is warranted in large ammunition installations.

- (4) *Terrain.* The site selected must have good all-weather characteristics if service is not to be interrupted during inclement weather. Storage areas must be well drained, accessible in all weather, and sufficiently level to facilitate operations. Top soil should be thin, and supported by a hard substrata of coral, sandstone, rock, or gravel that will support the weight of ammunition and heavy traffic. Organic clay and silt soil should be avoided if possible. Areas near the level of streams or in natural drainage channels, where flash floods may wreak havoc and bog down operations and equipment, also should be avoided.
- (5) *Space requirements.* When selecting a site, consideration should be given not only to the immediate requirement for storage space, but to the possible expansion of the area. The type and quantity of ammunition to be stored and the type of storage (area or road-side) to be used also will influence the size of the area required.
- (6) *Period of occupancy.* If operational plans require that the site be used for only a few days, some unfavorable conditions may be accepted that would make the site unsuitable for occupancy over a long period. Few sites will remain satisfactory longer than 30 days without considerable construction and repair of access roads and roads within the installation.
- (7) *Existing buildings.* Existing buildings that can be used for storage, living quarters, and offices, as well as caves that can be used for storage, also should be considered when selecting a site for future operations. However, when contemplating the use of such facilities, the unit commander must consider the problems of defense

and dispersion. Any fireproof building may be utilized for the storage of ammunition provided the rated floor load of the structure is adequate. Chemical incendiary and white phosphorous (WP) must *never* be stored in structures with wood floors.

- (8) *Defensibility.* The area selected must lend itself to defense and concealment. Overhead cover is important and should be utilized whenever possible. Facilities should be dispersed as much as practicable to preclude extensive damage in the event of enemy attack. Rolling country facilitates the establishment of effective outposts and helps screen activities from ground observation. Terrain that affords protection to infiltrators or is difficult to defend should be avoided. The close proximity to rearward tactical units is desirable as protection against enemy attack.
- (9) *Fire protection.* One of the greatest dangers to an ammunition depot is fire. An area in which flammable vegetation exists, or will exist before adequate preventive measures can be taken, is dangerous. Water is required in considerable quantities for fighting ammunition fires; thus, the local water supply should be adequate for that purpose.
- (10) *Proximity to other installations.* Locations near airfields or other installations, such as fuel dumps or marshalling yards, should be avoided to reduce the probability of being included in an attack on these installations, and to prevent hazards incident to the operation of aircraft in takeoff and landing.

*c. Area Layout.* The commander of the reconnaissance party, assisted by members of the reconnaissance party, will prepare a map overlay of the selected area showing a detailed layout of the new installation and the alternate site. The overlay will depict storage area, bivouac and mess area, road net, terrain features, cover, and defensive positions. It will also indicate the distances between road intersections and the need for construction. In short,

the overlay will be as complete as necessary to show where ammunition will be stored and where personnel will work, eat, live, and, if necessary, fight. In planning an efficient layout, the commander must consider all aspects of the unit's operation. Some of these considerations are as follows:

- (1) An arrangement should be sought that will provide the best and most convenient service to supported units.
- (2) Ease of control should be maintained.
- (3) Storage stacks should be easily accessible to ammunition trains.
- (4) The layout of the area must provide for all around defense.
- (5) Natural cover and concealment should be utilized to the maximum extent practicable.

*d. Reconnaissance Report.* The officer in charge of the reconnaissance party prepares a report to the Army Ordnance officer which includes the time of reconnaissance, area covered, and distance to the area. The report should also include information concerning the accessibility of the site to unit ammunition trains and to road and rail nets. Recommendations should be made on the present and potential capacity of the site, and the need for construction of roads, improvement of drainage system, and construction of communications lines. Comment should be made concerning the natural cover, concealment, and need for camouflage.

## 42. Advance Party

The leapfrogging of ASP's generally permits planning, laying out, and preparing a new location while issues are being made from the location to be vacated. After a suitable location has been selected, the new area must be readied for occupancy. This is the job of the advance party. The responsibilities of the advance party include—

- a.* Preparation of defensive outposts.
- b.* Digging sumps for the latrine and kitchen.
- c.* Establishing an internal communications net and arranging for connections with the external net.
- d.* Marking the area with signs and placing directional signs along access roads.
- e.* Informing supported units of the ASP location and the time when it will be operational.

## Section II. PREPARATION FOR OPERATIONS

**43. Priority of Tasks in the New Area**

Once the unit is established in the selected area, the following operations will be accomplished in the order indicated:

a. Complete area defense system to include complete external and internal communications systems.

b. Prepare for operations to accommodate supported units.

c. Set up housekeeping facilities for unit personnel.

**44. Area Requirements**

An installation handling conventional ammunition normally will require the following areas. Figure 2 is a layout of an ASP showing the various areas discussed below.

a. *Storage Area.* Two or more storage areas are required to provide dispersion and facilitate receipts and issues. Dispersion insures against a complete loss of a single type of ammunition in the event of fire, explosion, or enemy attack. Multiple storage locations permit simultaneous receipt, issue, and inventory. In general, there are two systems that may be used for storing ammunition in the field—roadside storage and area storage. The storage plan may be limited to one method only, or may include a combination of both. Layout of the storage area, however, will depend on the storage system being used. When storage areas are laid out initially, ample provision for expansion should be made. Whenever possible, roadside storage will be employed, as this minimizes the amount of area preparation and road construction which must be undertaken. Quantity-distance and storage compatibility requirements of TM 9-1903 will be complied with in the layout of storage areas. Main lines of communication will never be used for the roadside-type storage, and authority for use of other roads must be obtained from G4.

(1) *Area storage.* This type of storage consists of arranging stacks in a checkerboard fashion, spaced in accordance with storage categories and quantity-distance tables (TM 9-1903). Area storage is more adaptable to small installations where concealment is essential or in instances where

the road net is limited or inadequate for roadside storage. Dispersion is obtained by dividing the installation into two or more separate storage areas with adequate distance between them to reduce total destruction of the installation in the event of attack by mass destruction weapons.

(a) The advantages of area storage include the following:

1. The number of personnel required for adequate security of the installation is reduced.
2. Maximum storage in depth is permitted.
3. Better overall control of storage areas is provided.
4. Intra-installation transportation requirements are reduced.
5. The installation can be more readily expanded by the addition of another storage area.

(b) The disadvantages of area storage include the following:

1. An adequate internal road net must exist or one must be constructed.
2. Detailed planning and more extensive preparation are necessary in order to store ammunition in the area.
3. The ground must be sufficiently firm to permit accessibility under all climatic conditions and provide a substantial foundation for ammunition stacks.

(2) *Roadside storage.* This method of storage involves the arrangement of stacks along the edges of roads, spaced in accordance with quantity-distance tables (fig. 3). This method may be used in initial stages of an invasion or when distances to the front are relatively great, provided there is no serious threat to destruction of stocks by enemy aircraft, guerrilla action, or elements of enemy combat forces which have been bypassed. Often, this type of storage is necessary, especially in a fast-moving situation. Storage in depth is a valuable variation of

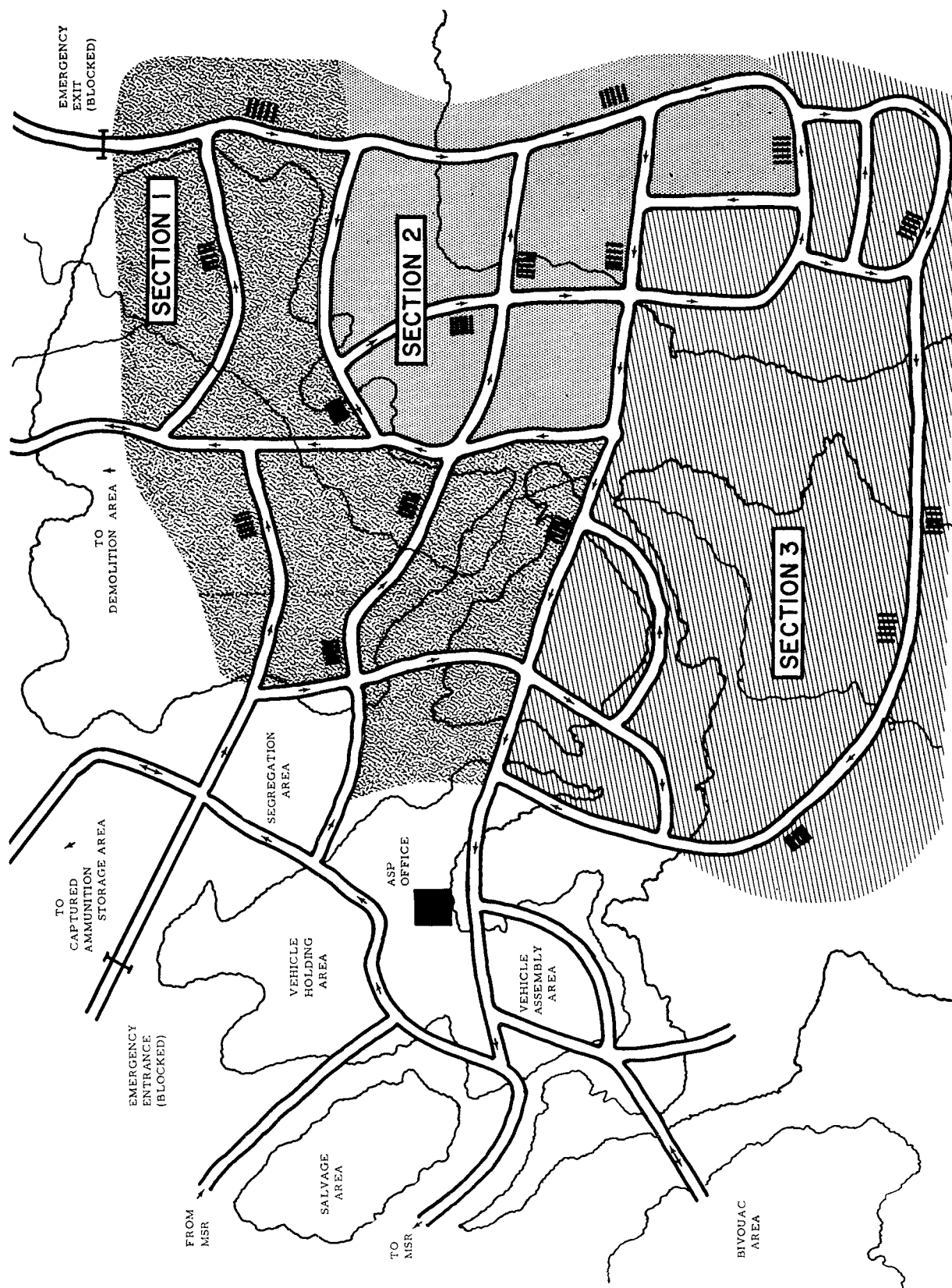
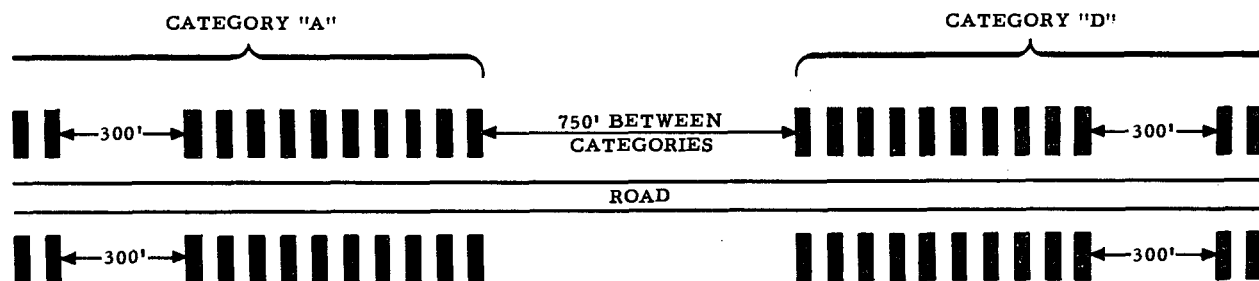


Figure 2. Type layout of an ASP.

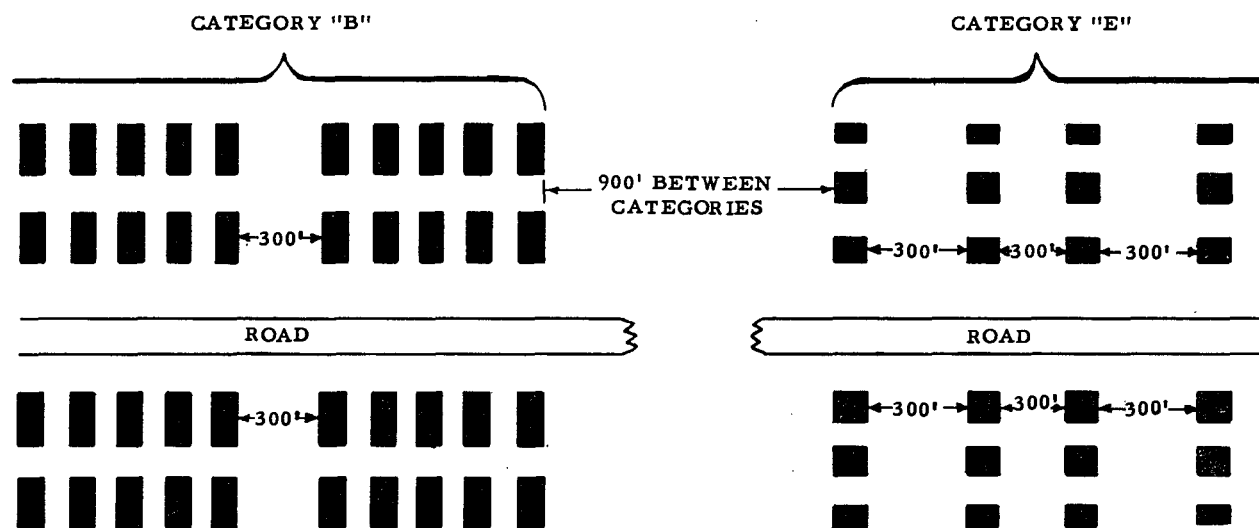




CATEGORIES "A" & "D"

GROSS TONS PER STACK - 20  
 GROSS TONS PER FSU - 400  
 DISTANCE OF STACK FROM OUTER EDGE OF ROAD - 30'  
 DISTANCE BETWEEN 20-TON STACKS UNBARRICADED - 50'  
 DISTANCE BETWEEN FSU'S UNBARRICADED - 300'  
 DISTANCE BETWEEN CATEGORIES - 750'

Figure 3. Typical roadside storage.



GROSS TONS PER STACK - 20  
 GROSS TONS PER FSU - 400  
 DISTANCE OF STACKS FROM  
 EDGE OF ROAD - 30'  
 DISTANCE BETWEEN 20-TON  
 STACKS UNBARRICADED - 50'  
 DISTANCE BETWEEN FSU'S  
 UNBARRICADED - 300'

GROSS TONS PER STACK - 10  
 GROSS TONS PER FSU - 50  
 DISTANCE OF STACKS FROM  
 EDGE OF ROAD - 30'  
 DISTANCE BETWEEN 10-TON  
 STACKS UNBARRICADED - 105'  
 DISTANCE BETWEEN FSU'S  
 UNBARRICADED - 300'

Figure 4. Roadside storage in depth.



straight roadside storage in cases where the large mileage of road required for roadside storage is not available (fig. 4). Storage in depth offers maximum tonnage per mile of road front, but the ammunition must be accessible to vehicles, roller conveyors, or cranes by direct approach.

(a) Some of the advantages of roadside storage are—

1. Minimum of preparation.
2. Ease of accessibility to stored stocks under all weather conditions.
3. Less susceptibility to complete destruction by mass destruction weapons.
4. Direct loading or unloading between vehicles and stacks.
5. Dispersion of stored materiel.
6. Ease of expansion of the installation.
7. Flexibility of storage.

(b) Some of the disadvantages of roadside storage are—

1. Loss of control of stocks.
2. Increased security requirement.
3. Problem of camouflage and concealment.
4. Possible increased loading time.
5. More susceptibility to destruction by guerrillas, airborne attack, or bypassed pockets of enemy.
6. Stock control difficulties.

*b. Segregation Area.* Ammunition received by an ASP or depot may not have been segregated. When this is the case, it must be segregated by lot number and type, usually in a separate area within the installation, prior to moving it to regular field storage units (FSU's). The segregation area also may be used for the receipt of ammunition returned to the installation for reconditioning. The segregation and classification of returned ammunition may be performed either in the segregation area or in the salvage area, depending upon the type and condition of the ammunition. ASP's also maintain areas for the storage of unserviceable ammunition or lots of suspended ammunition.

*c. Renovation Area.* Renovation activities are not performed by ammunition companies in field armies, but the depot layout plan must

provide a suitable location for such activities in COMMZ depots. However, normal maintenance is performed by all ammunition installations and, if extensive, a separate area is required.

*d. Vehicle Holding Area.* In order to reduce congestion in the installation, a parking area should be provided in which vehicles may be held until they can be loaded. It should be located near the installation office and situated so as not to interfere with the flow of traffic.

*e. Vehicle Assembly Area.* An area should be provided near the exit—which should also be located near the installation office—where loaded vehicles assemble and wait for other vehicles in the convoy to be loaded. This facilitates record keeping by the installation and permits vehicles to leave as a convoy, rather than in a piecemeal fashion.

*f. Salvage Area.* A salvage area normally is established for the storage of inert salvage material returned by supported units. This salvage material includes such items as packaging material, serviceable boxes, crates, and steel containers; and residue material, including nose plugs, grommets, metal links, clips, fired cartridge cases, and brass. The salvage area should be situated near the vehicle holding area to permit vehicles to unload this type of returned material prior to entering the storage area. Since salvage may contain live ammunition or loaded ammunition components, the salvage area should be separated from other storage areas by at least 800 yards.

*g. Demolition Area.* An area unusable for other purposes and well cleared of vegetation should be chosen for demolition operations. A powder burning ground and detonation pits should be included. The usual type of pillbox of splinterproof shelter is necessary to protect personnel during demolition. A small arms ammunition popping pit is desirable. If the installation is close to the sea and transportation facilities are available, disposition of unserviceable ammunition at sea is preferred.

*h. Enemy Ammunition Area.* Captured enemy ammunition must be stored in a separate area removed from other areas by at least 800 yards.

*i. Bivouac Area.* The bivouac area should be located as near as practicable—consistent with required safety factors—to the installation

office. The area should be accessible, camouflaged, and located on high, firm, and well-drained terrain. The area selected should be a minimum of 800 yards from the nearest ammunition storage area.

*j. Mess Area.* The mess area should be located on high ground in the vicinity of the bivouac area and a minimum of 800 yards from the nearest ammunition storage area.

#### **45. Subdivision of Storage Areas**

In the operation of a large ammunition depot where roadside storage or a combination of roadside and area storage is used, the storage area may be so large that it may be necessary to divide the installation into subdepots. Each subdepot may be placed under the subordinate command of a company, or platoon, depending on the size of the installation and the availability of troop units. In this case, operations are decentralized but are controlled by a main depot office which is normally centrally located for effective control. The extent of subdivision required will be determined by the depot commander and based on the depot storage plan. Ammunition installations normally consist of a number of storage areas, work areas, and areas to accommodate housekeeping and administrative facilities. These installations, depending on their size, are operated by a single

ordnance ammunition company, a portion of a company, or a combination of companies. The number of areas will depend on the mission and requirements of the installation. Usually, each installation will maintain several widely dispersed storage areas, with similar stacks in each. The first subdivision of an ASP, depot, or subdepot will be by section. Sections will be further subdivided into FSU's, which will be designated by letter. Stacks within FSU's will be designated by number; e.g., Section I, FSU-A, stack 1.

#### **46. Signs**

Signs should be used liberally to indicate routes, storage locations, entrances, and exits; specific areas such as demolition, smoking, and vehicle holding areas; and to facilitate traffic control. In addition, sufficient signs should be erected along the main supply route to insure that supported units will have no difficulty in locating the installation. Signs should be uniform in size and color and letters should be large enough to be read easily. They should be erected high enough to be read easily from vehicles, and should not be placed behind obstructions or too close to objects that might detract from their purpose. When a unit displaces, all signs pertaining to the specific unit must be removed.

## CHAPTER 7

### SECURITY AND DEFENSE

---

#### 47. General

Security includes all measures taken to protect an installation or activity from observation, attack, sabotage, pilferage, or other enemy action. Threats to the security of an installation must be evaluated to determine their relative importance and plans and readiness for meeting such threats must be prepared and constantly maintained. These plans must be coordinated with adjacent units and installations. With the development and improvement of materials and techniques, the scope of war has broadened until both combat and service units face a wide variety of possible threats. Enemy capabilities must be constantly studied to determine the pattern for security and the emphasis to be placed on its various aspects. The enemy can be expected to carry out various types of attacks during any operation. Since the company cannot provide the personnel necessary for complete perimeter defense of an ammunition installation without substantial or complete sacrifice of its mission capability, the principal defensive effort must be directed toward denying the enemy use of roads by concentrated fire and roadblocks. When the tactical situation demands it, combat units may be assigned to the defense of the installation.

#### 48. Defense Plan

a. Plans for local defense should be considered during the initial reconnaissance of a site to be occupied by an ordnance ammunition company. Information obtained during this reconnaissance, which will aid in establishing plans for defense of the area, should be noted on a map. This information will include the road net in and adjacent to the site, load limits for bridges, types and conditions of road surfaces, natural obstacles, and camouflage and concealment available.

b. The company commander must prepare a plan for the defense and security of his command based upon its specific situation and location, and the mission to be accomplished. The plan must be flexible and must be all inclusive so that every foreseeable situation will be cov-

ered, including attacks by aircraft, ground forces, guerrillas, and missiles. The plan also should provide for defense against chemical, biological, and radiological (CBR) attacks.

c. Plans for security and defense of an ammunition installation should be explained to all members of the command and should be rehearsed frequently so that each individual is familiar with and proficient in the accomplishment of his assigned tasks. The duties of key personnel should be explained clearly and alternates selected to perform the specific duties in the event that key personnel become casualties or are unable to perform their assigned tasks for other reasons.

#### 49. Defensive Positions

Preparation of defensive positions should be undertaken by the advance party as soon as it arrives in the area and should be completed as soon as possible. Slit trenches and foxholes must be dug, emplacements prepared, roadblocks constructed, natural obstacles improved, and artificial barriers, such as minefields and barbed wire entanglements, constructed. Maximum use should be made of natural camouflage and defensive positions. Outpost positions should be established and manned, and an alarm system established to warn against enemy ground, air, or airborne attack; guerrilla action; CBR attack; and fire.

#### 50. Camouflage

In the operation of an ammunition installation, security from both observation and attack is of basic importance. The degree of security necessary will be dependent upon the distance from the front and which side has air superiority. The best defense of an ammunition installation, particularly from air attack, can be obtained by passive means. It is desirable that the site selected for an ammunition installation provide as much natural cover, concealment, and dispersion as possible. The site should also offer good fields of fire for protection against enemy ground action. As actual field conditions seldom provide sufficient cover to screen operations, camouflage must be employed

whenever possible. The method of screening must, in all cases, be supported by camouflage discipline if the area is to remain inconspicuous. Technological advances in the detection devices now available provide the enemy with the capability of locating units and installations without line of sight contact. This is accomplished by detecting eddy currents generated by electrically operated equipment, by means of terrain acoustics, and through the use of infrared equipment. Prevention of light glow from tents or buildings is especially important in forward areas. Blackout measures should be strictly adhered to and all operational tents and buildings lightproofed to prevent detection by the enemy at night. Personnel should be warned against revealing the unit's position by lighted cigarettes, flashlights, shiny surfaces, etc.

## 51. Dispersion

Enemy capability to deliver nuclear, biological, and chemical attacks by aircraft and missiles requires maximum dispersion in order to reduce the amount of damage inflicted by a single attack. The layout of an ammunition installation is a compromise between the requirements for dispersion, the need for security, and the efficiency of operations.

## 52. Security Inspections

Installation and activity commanders will insure that security measures and procedures are adequate and are being complied with. This will include a thorough study and analysis of the installation or activity property (real and physical) and its operation, determination of any physical security deficiencies, as well as any instances of overemphasized security measures, in order that appropriate recommendations may be made for correction. Inspections should be conducted at irregular intervals but frequently enough to assure compliance with established security regulations and procedures.

## 53. Ground Attack

Each member of the Ordnance ammunition company should be familiar with the unit defense plan, including when and where he will fight, if necessary. In the event of enemy ground attack, all personnel should protect the

installation with the weapons available and in conformance with the defense plan. Higher headquarters and any nearby friendly units should be notified of the attack immediately. The installation should not be abandoned, except in the case of a general withdrawal and upon authority of higher headquarters. Destruction of ammunition to prevent capture by the enemy is covered in paragraph 58.

## 54. Guerrilla Action, Airborne Attack and Infiltration

Defense against guerrillas, airborne attack, and infiltrators should be conducted in accordance with the principles outlined in FM 31-15.

## 55. Air Attack

The best defense an ammunition installation can offer against an air attack is a passive one by means of camouflage, concealment, and dispersion.

## 56. CBR Attack

Defense plans for an ammunition installation should make provisions for defense against CBR attacks, which can be delivered by aircraft, conventional artillery, missiles, and infiltrating ground forces. The CBR plan for the installation can be prepared as part of the overall defense plan or as an annex thereto. All personnel should be trained to promptly recognize such attacks, and should be familiar with the first-aid and self-aid measures to be taken and with the measures necessary to reduce the effects of the damage. A unit CBR plan should include the following:

a. Training of personnel in defensive measures, first-aid and self-aid measures to be taken in case of a CBR attack. (See FM's 21-40, 21-41, and 21-48, and TC 101-1.)

b. A warning system with provisions for designating the type of attack, if possible.

c. Provision for and description of duties of fire guards, security guards, and unit CBR personnel.

d. Provisions for maintaining liaison with the Chemical Corps for advice and assistance.

e. Inspection of ammunition received, if contamination is suspected.

f. Methods for segregating known contaminated ammunition if its decontamination cannot be accomplished by unit personnel. Areas

in which such contaminated supplies are stored should be properly marked with standard marking signs, as a warning to other personnel.

*g.* Facilities for prompt decontamination of individuals, equipment, supplies, and areas.

*h.* Prompt treatment of CBR casualties.

## 57. Destruction of Ammunition

Presence of enemy troops in the vicinity of an ammunition installation does not necessarily call for either evacuation or destruction of ammunition. The authority to evacuate or destroy ammunition must be obtained from the appropriate higher headquarters. This authorization should be verified. In the event communications with the appropriate commander is impossible, the decision must be made by the senior officer present. When a decision has been reached to evacuate or destroy an ammunition installation, the following procedures will be observed:

*a.* Ammunition should be evacuated in the following priority to prevent capture:

(1) Classified items.

(2) Primers, fuzes, items in short supply, and ammunition filled with toxic chemicals.

(3) Other items.

*b.* Ammunition should be destroyed in the following priority to prevent capture:

(1) Classified items, primers, fuzes, mines, rockets, propelling charges and other items specifically designated and ammunition capable of being used with enemy weapons.

(2) Ammunition not included in the above list may be abandoned, since its use by the enemy is unlikely, and it may be expected to remain serviceable and may be recaptured.

*c.* Ammunition filled with toxic chemicals should be evacuated, if possible. If evacuation is impossible, this ammunition will not be destroyed without specific orders from the theater Army commander since its destruction will contaminate the area and if toxic chemicals are not already in use in the theater, such action may be the basis for a claim by the enemy that its use has been initiated by our troops.



## CHAPTER 8

### COMMUNICATIONS

#### 58. General

a. Communication between the ordnance ammunition and higher headquarters is by telephone, teletypewriter, and radio. Internal communication is by telephone and radio. Communications equipment is operated on a 24-hour basis. An effective system of messengers also must be established to insure communications when other means are interrupted or are not available.

b. The communications system must be employed in accordance with prescribed communications operating procedures. In the utilization of communications facilities, company personnel must be impressed with the necessity for maintaining security and must be instructed to keep the number of messages to a minimum and to keep messages brief.

#### 59. Wire Communication

a. The company can install, operate, and maintain a company wire net. The company and battalion headquarters are not directly connected by wire. Instead, the company arranges to enter the area communications system at the nearest signal center. Communications personnel of the company install and maintain field wire lines within the ammunition installation. Installation of field wire lines from the area signal center to the company is the responsibility of the area signal center (FM 11-86).

b. The company is provided 15 telephones, which are distributed as follows: 2 to company headquarters, 2 to the operations section, 1 to the service platoon, and 5 to each of the magazine platoons (1 phone for each storage area). The telephones are connected to two switchboards, both of which are located at company headquarters when both magazine platoons are operating in the same location. Two teletypewriter sets also are provided. The teletypewriters operate in the wire net and are used for communication between the company and battalion headquarters.

c. When the company is operating in two locations simultaneously, a teletypewriter and

switchboard are provided to each location to facilitate internal and external wire communication. Figure 5 depicts a type wire net for the company when it is operating at two separate locations.

#### 60. Radio Communications

a. Two vehicular mounted radio teletypewriter sets are provided. These sets permit continuous wave (CW), and amplitude modulated (AM) voice, or frequency-shift radio teletypewriter communications between the company and higher headquarters, and between the company headquarters and the augmented magazine platoon when the company is operating at two locations simultaneously. These radio teletypewriter sets operate in the battalion command net.

b. Each of the five organizational elements of the company is provided a portable frequency-modulated (FM) radio set. These sets are provided for internal radio communication. When the company is operating at two locations, it is unlikely that communication between both locations will be possible utilizing these radio sets, due to range limitations. Therefore, radio communication between the company headquarters and the magazine platoon operating in another location will be accomplished by utilizing the longer range radio teletypewriter sets. The type radio nets for the company are depicted in figure 6.

#### 61. Messengers

When the use of organic communication facilities is impracticable or impossible due to security reasons, damage to signal equipment, jamming, or for any other reason, it may be necessary to utilize messengers. Personnel of the company not directly engaged in technical mission operations should be used as messengers.

#### 62. Communication Instructions

a. The installation and operation of communications facilities will be in conformance with the "signal operating instructions" (SOI) and "standing signal instructions" (SSI) of higher

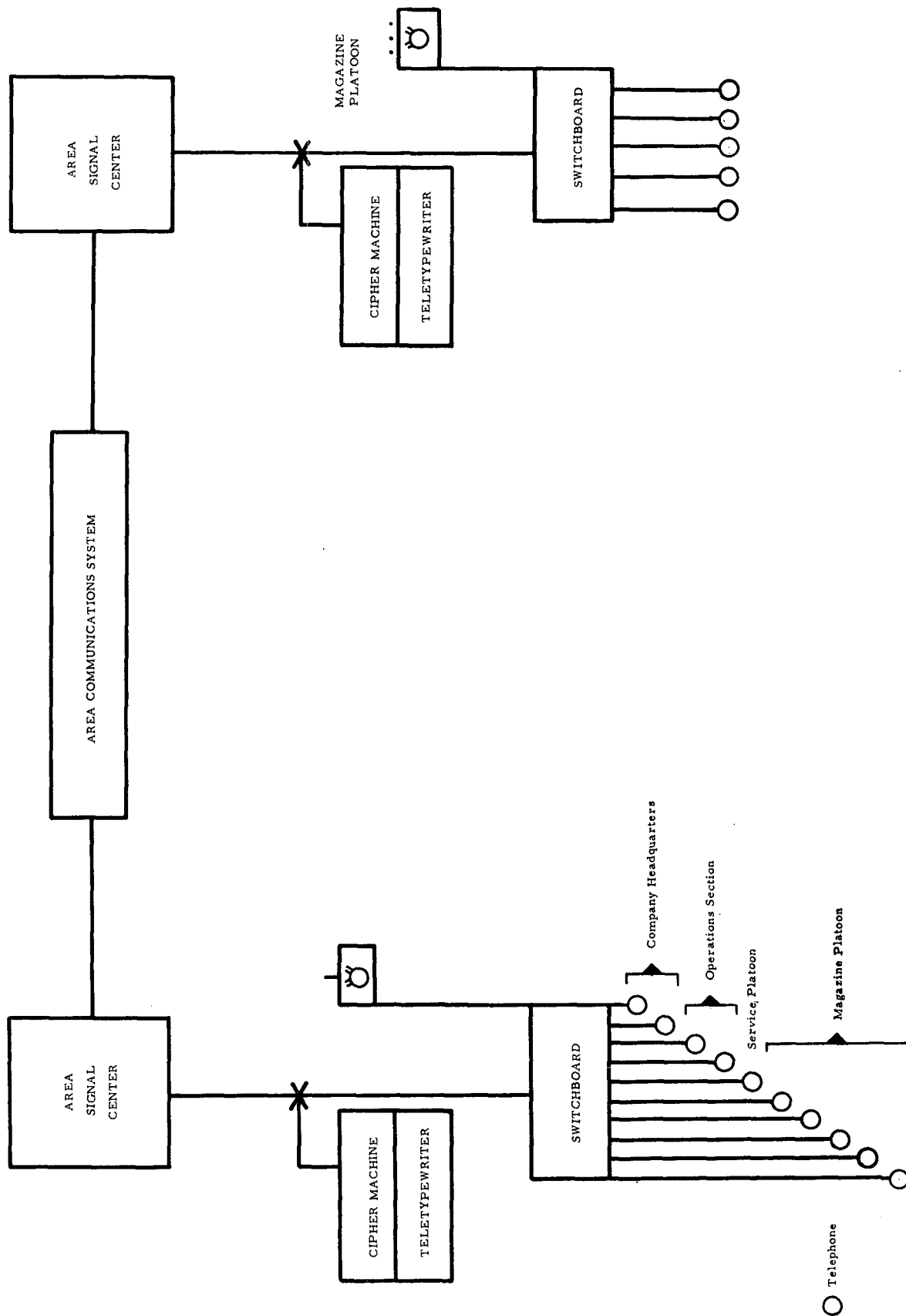


Figure 5. Type wire net, ordnance ammunition company (operating at two separate locations).

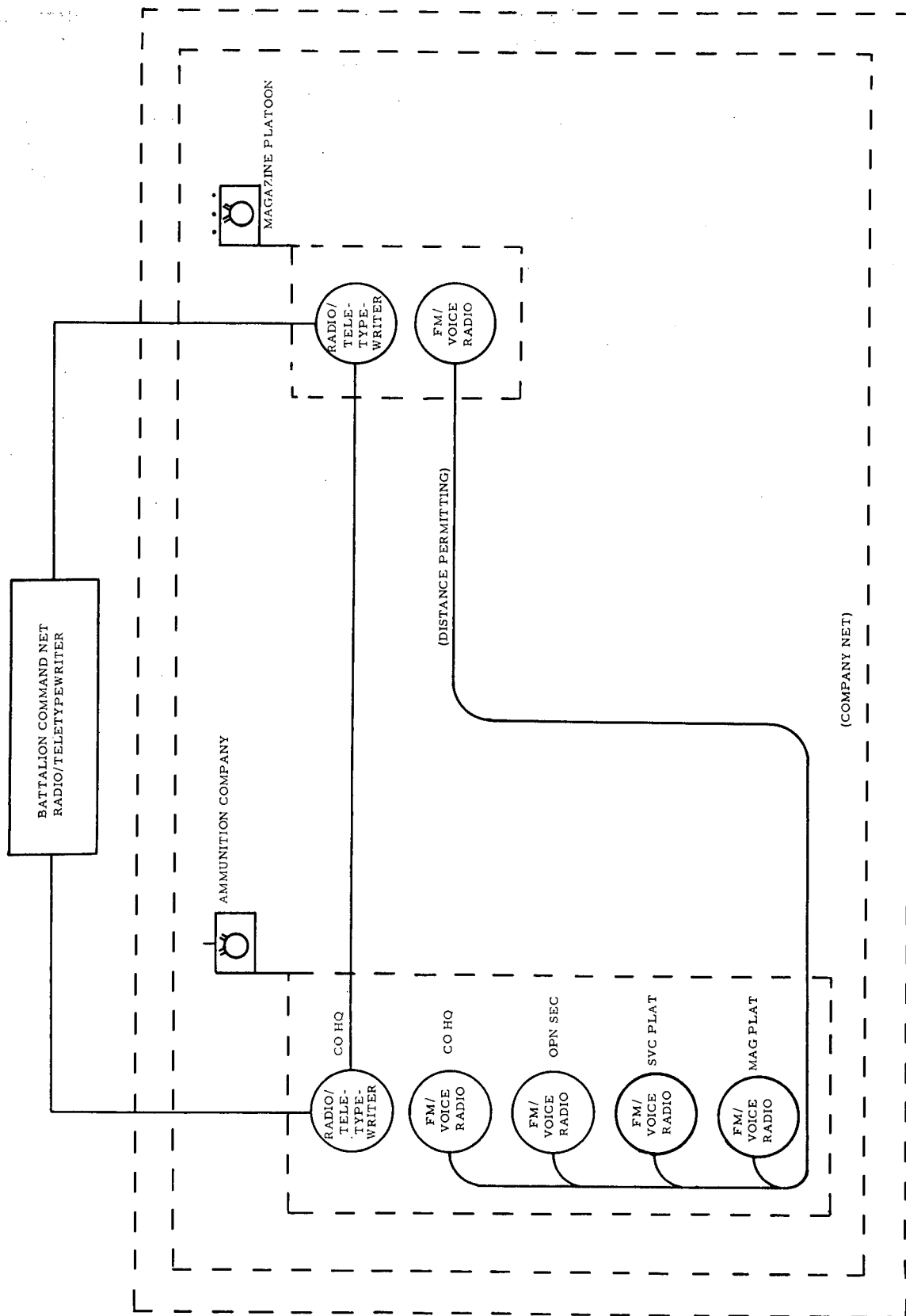


Figure 6. Type radio nets, ordnance ammunition company (operating at two separate locations).

headquarters. The SOI contains items for the technical control and coordination of signal communications. SOI items are for daily use and are subject to frequent change. The SSI contains items, regulatory in nature, that give instructions for the use of SOI items as well as other instructions. SSI items are not subject to frequent change.

b. SOI's and SSI's are distributed in sufficient copies to be available to communications personnel down to battalion level. The ordnance battalion will make extracts of the SOI for use by the companies of the battalion and furnish copies of the SSI to the companies. SOI's are classified and copies, or extracts therefrom, must be accounted for. The loss of an extract or a copy must be reported immediately.

c. Within the company, communications procedures that can be standardized are made part of the company SOP. SOP's must not violate instructions disseminated in other types of official publications from higher headquarters.

### 63. Security

a. *General.* Communication security is the protection resulting from all measures designed to prevent or delay unauthorized persons from gaining information of military value from communication sources. It includes physical, cryptographic, and transmission security. Commanders insure that communication security orders and regulations are understood and observed by all concerned with communication. Officers and enlisted men who personally transmit radio messages must be particularly concerned with security measures.

b. *Physical Security.* Physical security encompasses the protection of classified signal equipment and material (including plain-language copies of classified messages and carbons) from capture, damage, or loss. Before a command post is vacated, it is inspected to insure that no messages, carbons, or copies of maps or orders are left behind. When SOI's or cryptomaterials are compromised by loss or capture, the facts must be reported immediately to the battalion commander. Personnel must be trained in the methods of destroying equipment and classified documents to prevent their falling into the hands of the enemy. Priorities of destruction are assigned to equipment

and material to insure that classified items are destroyed prior to those having no security classification.

#### c. *Cryptographic Security.*

- (1) Cryptographic security is assured through the proper use of authorized cryptographic systems. Strict observance of cryptographic operating instructions is essential to reduce the effectiveness of the enemy's communication intelligence effort. The use of unauthorized cryptosystems is prohibited, for locally devised systems usually can easily be solved by the enemy and may give the user a false sense of security. The ordnance ammunition company is provided cipher machines for use in encrypting and decrypting messages.
- (2) Security hazards may be minimized by keeping messages brief and by avoiding stereotyped phraseology in the preparation of messages, especially at the beginning and end. Identical texts will not be sent in both clear and encrypted messages or in more than one cryptographic system. When clear text is used, landmarks that can be associated with encrypted map locations are not given as references.
- (3) Codes and ciphers and instructions for their use will be found in the division SOI and SSI. Key lists for cipher devices may be found in the division SOI. Instructions for the use of cipher devices are distributed separately by the cryptographic distribution authority of the command.

#### d. *Transmission Security.*

- (1) Transmission security measures make it difficult for the enemy to intercept transmissions and prevents him from using friendly communication systems for deception purposes. A message is transmitted by the most secure means available, consistent with its priority. Radio is particularly susceptible to interception, direction-finding, traffic analysis, and deception.
- (2) Personnel who operate radios must be trained in correct procedures so that they will not divulge information to

the enemy through faulty operating procedures or techniques. Operators and personnel preparing messages for transmission by radio must be aware of the ability of the enemy to gain information from radio traffic. Those transmitting clear-text messages by voice radio must use prescribed radiotelephone procedure and must preplan the content and wording of each transmission, using prescribed authentication systems and eliminating unnecessary transmissions. A high standard of net discipline is essential in maintaining communication security; therefore, training in correct operating procedure must be continual.

#### 64. Duties and Responsibilities of Personnel

*a. General.* Communications specialists assigned to the company include radio teletypewriter team chiefs, radio teletypewriter operators, switchboard operators, and a wireman. These personnel install and operate the radio teletypewriter sets, teletypewriter sets, cipher machines, and switchboards organic to the company headquarters. The portable radio sets organic to each of the organizational elements of the company are operated by personnel assigned to those elements, who perform as radiotelephone operators in addition to other duties. Arrangements must be made to train these radiotelephone operators. The operations and training of communications personnel of the company are supervised by a unit communications officer who performs this function as an additional duty.

*b. Communications Officer.* The unit communications officer performs the following functions:

- (1) Keeps the company commander informed on the communications situation.
- (2) Coordinates communications with higher and adjacent units.
- (3) Prepares communications plans for the commander's approval.
- (4) Advises the area signal center serving the unit of anticipated changes in communications requirements. This is of particular importance in the event of movement.

- (5) Assists in the selection of the site for the company command post.
- (6) Supervises the installation, operation, and maintenance of the company's communication system.
- (7) Supervises the determination of communications supply requirements.
- (8) Secures current SOI and SSI extracts from higher headquarters or prepares extracts from SOI's and SSI's for use by company communications personnel.

*c. Radio Teletypewriter Operators and Team Chiefs.* The radio teletypewriter operators install, maintain, and operate the radio teletypewriter sets, teletypewriter sets, and the cipher machines. Sufficient personnel are provided to permit around-the-clock operations. The operators are supervised by team chiefs who also assist in installing, maintaining, and operating the equipment. Communications personnel are also responsible for the proper use of equipment, for using correct procedures, and for maintaining security. They must be familiar with the SOI and SSI with respect to procedures, call signs, etc.; must know the capabilities and limitations of their equipment; and must know the other facilities incorporated into the radio and wire nets of which the company is a part.

*d. Switchboard Operators.* A senior switchboard operator and a switchboard operator are provided to install, operate, and maintain the company switchboards. The company wireman also serves as a switchboard operator. Switchboard operators must know the techniques of installation and operation of field telephone equipment, the capabilities and limitations of this equipment, and the facilities incorporated into the communications system to which the switchboards are connected. The company switchboards are operated around the clock. Relief operators are provided by utilizing the charge of quarters and guard personnel to handle the switchboard when a call is being received or made during periods when the switchboard is not manned by an assigned operator.

*e. Radiotelephone Operators.* These personnel operate and perform organizational maintenance on the portable radio sets used by the company. They are responsible for the proper use of the radios, for using correct radio pro-



cedures, for maintaining communications security, and for knowing the capabilities and limitations of their equipment.

*f. Wireman.* The wireman installs and maintains the field-wire communications system and performs maintenance on the field-wire communications equipment of the company. He also serves as a switchboard operator.

## **65. Training**

*a.* Communications specialists normally receive training at service school level or in troop schools established in the command. Arrangements may be made with the signal officer of

the command for the necessary training of specialists. Concurrently, officers and other communications users are given general training covering signal equipment operation, radio-telephone procedures, telephone procedures, message writing, and communication security. Instructions should cover techniques of operation under unfavorable conditions and procedures employed to avoid or to minimize the effects of enemy jamming.

*b.* Team training begins as soon as a point of minimum proficiency is reached in individual training. Communications training is integrated with unit training at every opportunity.

## APPENDIX I

### REFERENCES

The following references should be checked frequently for latest changes or revisions relating to material covered in this field manual.

#### 1. Army Regulations

|         |                                                                                           |
|---------|-------------------------------------------------------------------------------------------|
| 30-11   | Army Food Program.                                                                        |
| 40-580  | Control of Hazards to Health from Radioactive Materials.                                  |
| 55-355  | Military Traffic Management Regulation.                                                   |
| 55-445  | Debarcation of Troops from Transports.                                                    |
| 65-75   | Unit Mail Services.                                                                       |
| 75-85   | Authority to Waive Ammunition and Explosives Quantity-Distance Safety Standards.          |
| 220-10  | Preparation for Oversea Movement of Units.                                                |
| 220-45  | Duty Rosters.                                                                             |
| 220-70  | Companies; General Provisions.                                                            |
| 220-345 | Unit Histories.                                                                           |
| 220-346 | Journals and Journal Files.                                                               |
| 310-31  | Organization and Equipment Authorization Tables; Tables of Organization and Equipment.    |
| 310-110 | Orders, Bulletins, Circulars, and Memorandums Issued From Headquarters of Field Commands. |
| 320-5   | Dictionary of United States Army Terms.                                                   |
| 320-50  | Authorized Abbreviations and Brevity Codes.                                               |
| 335-60  | Morning Reports.                                                                          |
| 340-15  | Correspondence.                                                                           |
| 345-200 | Records Administration.                                                                   |
| 355-5   | General Provisions.                                                                       |
| 360-33  | Activation, Training, and Movement of Units.                                              |
| 380-5   | Safeguarding Defense Information.                                                         |
| 385-30  | Safety Color Code Marking.                                                                |
| 385-40  | Accident Reporting and Records.                                                           |
| 420-90  | Fire Prevention and Protection.                                                           |
| 600-10  | Military Discipline.                                                                      |

|            |                                                                                         |
|------------|-----------------------------------------------------------------------------------------|
| 611-201    | Manual of Enlisted Military Occupational Specialties.                                   |
| 700-1300-8 | Malfunctions Involving Ammunition and Explosives.                                       |
| 700-2300-1 | Motor Vehicles.                                                                         |
| 711-16     | Installation Stock Control and Supply Procedures.                                       |
| 711-41     | Army Supply Status Reporting System; Unit and Organization Equipment Status Report.     |
| 711-1300-8 | Ordnance Ammunition Stock Status Report.                                                |
| 725-5      | Preparation, Processing, and Documentation for Requisitioning, Shipping, and Receiving. |
| 735-10     | Accounting for Lost, Damaged, and Destroyed Property.                                   |
| 735-11     | Accounting for Lost, Damaged, and Destroyed Property.                                   |
| 735-35     | Supply Procedures for TOE Units, Organizations, and Non-TOE Activities.                 |
| 755-70     | Demilitarization and Disposal of Arms, Ammunition, and Implements of War.               |
| 755-1300-6 | Responsibilities for Explosive Ordnance Disposal.                                       |

#### 2. Special Regulations

|           |                                                     |
|-----------|-----------------------------------------------------|
| 55-720-2  | Movement of Units Within Continental United States. |
| 75-70-10  | Disposal by Dumping at Sea.                         |
| 385-45-20 | Fire Report.                                        |
| 755-140-1 | Ammunition.                                         |

#### 3. Field Manuals

|      |                                                                                 |
|------|---------------------------------------------------------------------------------|
| 3-5  | Tactics and Techniques of Chemical, Biological, and Radiological (CBR) Warfare. |
| 5-20 | Camouflage, Basic Principles and Field Camouflage.                              |
| 5-25 | Explosives and Demolitions.                                                     |
| 5-31 | Use and Installation of Booby-traps.                                            |

- |        |                                                                               |                                  |                                                                                                                                    |
|--------|-------------------------------------------------------------------------------|----------------------------------|------------------------------------------------------------------------------------------------------------------------------------|
| 9-1    | Ordnance Service in the Field.                                                | 101-5                            | Staff Officers' Field Manual;                                                                                                      |
| 9-5    | Ordnance Ammunition Service.                                                  |                                  | Staff Organization and Pro-                                                                                                        |
| 11-86  | Combat Area Signal Battalion,<br>Army.                                        |                                  | cedures.                                                                                                                           |
| 19-40  | Handling Prisoners of War.                                                    | 101-10                           | Staff Officers' Field Manual;                                                                                                      |
| 20-15  | Tents and Tent Pitching.                                                      |                                  | Organization, Technical, and                                                                                                       |
| 20-32  | Land Mine Warfare.                                                            |                                  | Logistical Data.                                                                                                                   |
| 21-5   | Military Training.                                                            | <b>4. Technical Manuals</b>      |                                                                                                                                    |
| 21-6   | Techniques of Military Instruc-<br>tion.                                      | 9-1300-205                       | Ammunition for Mortars.                                                                                                            |
| 21-10  | Military Sanitation.                                                          | 9-1370-200                       | Military Pyrotechnics.                                                                                                             |
| 21-11  | First Aid for Soldiers.                                                       | 9-1900                           | Ammunition, General.                                                                                                               |
| 21-13  | The Soldier's Guide.                                                          | 9-1903                           | Care, Handling, Preservation<br>and Destruction of Ammuni-<br>tion.                                                                |
| 21-15  | Care and Use of Individual<br>Clothing and Equipment.                         | 9-1905                           | Ammunition Renovation.                                                                                                             |
| 21-18  | Foot Marches.                                                                 | 9-1910                           | Military Explosives.                                                                                                               |
| 21-20  | Physical Training.                                                            | 9-1940                           | Land Mines.                                                                                                                        |
| 21-26  | Map Reading.                                                                  | 9-1946                           | Demolition Materials.                                                                                                              |
| 21-30  | Military Symbols.                                                             | 9-1950                           | Rockets.                                                                                                                           |
| 21-31  | Topographic Symbols.                                                          | 9-1955                           | JATOS, General.                                                                                                                    |
| 21-40  | Small Unit Procedures in<br>Nuclear, Biological, and<br>Chemical Warfare.     | 9-1990                           | Small-Arms Ammunition.                                                                                                             |
| 21-41  | Soldier's Handbook for Nuclear,<br>Biological, and Chemical<br>Warfare.       | 9-2810                           | Preventive Maintenance, Sup-<br>ply, Inspection, and Training<br>Procedures: Tactical Motor<br>Vehicle.                            |
| 21-48  | CBR Training Exercises.                                                       | 9-2851                           | Painting Instructions for Field<br>Use.                                                                                            |
| 21-60  | Visual Signals.                                                               | <b>5. Technical Bulletins</b>    |                                                                                                                                    |
| 21-75  | Combat Training of the In-<br>dividual Soldier and Patrol-<br>ling.           | 9-AMM-2                          | Ammunition; Restricted or Sus-<br>pended.                                                                                          |
| 21-150 | Hand-to-Hand Combat.                                                          | 9-AMM-4                          | Small Arms Ammunition; Lots<br>and Grades.                                                                                         |
| 22-5   | Drill and Ceremonies.                                                         | 9-AMM-5                          | Ammunition: Federal Stock<br>Number and Department of<br>Defense Codes.                                                            |
| 22-100 | Military Leadership.                                                          | 9-1905-1                         | Assignment of Ammunition Lot<br>Numbers, or Suffixes Thereto,<br>for Regrouped, Renovated,<br>or Modified Lots of Am-<br>munition. |
| 23-5   | U. S. Rifle, Caliber .30, M1.                                                 | 9-1940-13                        | Mine, Antitank, NM, M19<br>(T18E4); Mine, Antitank,<br>Practice, Heavy, M20 (T38);<br>and Activator, Antitank<br>Mine, M2.         |
| 23-25  | Bayonet.                                                                      | 9-1940-14                        | Mine, Antitank: HE, Light, M7<br>(series) Storage and Use of<br>Distorted and Exuding<br>Mines.                                    |
| 23-30  | Grenades and Pyrotechnics.                                                    |                                  |                                                                                                                                    |
| 25-10  | Motor Transportation, Opera-<br>tions.                                        | <b>6. Army Training Programs</b> |                                                                                                                                    |
| 26-5   | Interior Guard.                                                               | 9-17                             | Ordnance Ammunition Units<br>and Detachments.                                                                                      |
| 27-10  | The Law of Land Warfare.                                                      |                                  |                                                                                                                                    |
| 30-7   | Combat Intelligence Battle<br>Group, Combat Command,<br>and Smaller Units.    |                                  |                                                                                                                                    |
| 31-15  | Operations Against Airborne<br>Attack, Guerrilla Action, and<br>Infiltration. |                                  |                                                                                                                                    |
| 31-25  | Desert Operations.                                                            |                                  |                                                                                                                                    |
| 31-30  | Jungle Operations.                                                            |                                  |                                                                                                                                    |
| 31-70  | Basic Cold Weather Manual.                                                    |                                  |                                                                                                                                    |
| 31-71  | Northern Operations.                                                          |                                  |                                                                                                                                    |

- 9-201 Army Training Program for Ordnance of the Field Army.

## 7. Department of the Army Pamphlets

- 108-1 Index of Army Motion Pictures, Film Strips, Slides, and Phono-Recordings.
- 301-1 Index of Administrative Publications (Army Regulations, Special Regulations, Department of the Army Pamphlets, Commercial Traffic Bulletins, Military Traffic Management Bulletins, General Orders, Bulletins and Circulars).
- 310-2 Index of Blank Forms.
- 310-3 Index of Training Publications (Field Manuals, Reserve Officers' Training Corps Manuals, Training Circulars, Army Training Programs and Mobilization Training Programs, Army Subject Schedules, Army Training Tests, War Department and Department of the Army Posters, and Firing Tables and Trajectory Charts).
- 310-4 Index of Technical Manuals, Technical Bulletins, Supply Bulletins, Lubrication Orders, and Modification Work Orders.
- 310-5 Index of Graphic Training Aids and Devices.
- 310-7 Index of Tables of Organization and Equipment, Tables of Organization, Type Tables of Distribution, and Tables of Allowances.
- 310-29 Index of Supply Manuals; Ordnance Corps.

## 8. Supply Manuals

- 9-1-8140 Containers, Packaging, and Packing Supplies: (Class 8140 Ammunition Boxes, Packages, and Special Containers).
- 9-2-1300 Ammunition and Explosives: (Class 1305 Ammunition, Through 30-mm;) (Class 1310 Ammunition, over 30-mm up to 75-mm;) (Class 1315 Am-

munition, 75-mm Through 125-mm;) (Class 1320 Ammunition, over 125-mm;) (Class 1325 Bombs;) (Class 1330 Grenades;) (Class 1336 Guided Missile Warheads and Explosive Components;) (Class 1340 Rockets and Rocket Ammunition;) (Class 1345 Land Mines;) (Class 1370 Pyrotechnics;) (Class 1375 Explosives, Bulk Propellants, and Explosive Devices;) (Class 1390 Fuzes and Primers).

- 9-5-1305 Ammunition and Explosives: (Class 1305 Ammunition Through 30-millimeter).
- 9-5-1310 Ammunition: (Class 1310 Ammunition, over 30-millimeter up to 75-millimeter).
- 9-5-1315 Ammunition: (Class 1315 Ammunition; 75-millimeter Through 125-millimeter).
- 9-5-1320 Ammunition and Explosives: (Class 1320 Ammunition, over 125-millimeter).
- 9-5-1325 Ammunition and Explosives: Bombs.
- 9-5-1330 Grenades, Hand and Rifle, and Related Components.
- 9-5-1336 Ammunition Guided Missile Warheads and Explosive Components.
- 9-5-1340 Ammunition: (Class 1340 Rockets and Rocket Ammunition).
- 9-5-1345 Ammunition and Explosives: Land Mines.
- 9-5-1370 Ammunition: (Class 1370 Pyrotechnics, Military, All Types).
- 9-5-1375 Ammunition: (Class 1375 Explosives, Bulk Propellants, and Explosive Devices).
- 9-5-1390 Ammunition and Explosives: (Class 1390 Fuzes and Primers).
- 9-5-1410 Ammunition: Guided Missiles.

## 9. Training Circulars

- 101-1 Prediction of Fallout and Radiological Monitoring and Survey.

# APPENDIX II

## LOADING PLAN FOR ORDNANCE AMMUNITION COMPANY (SAMPLE)

Each organization should maintain a current unit loading plan indicating by type vehicle where each TOE item will be loaded and where each member of the company will ride. The following loading plan is designed solely for guidance and may be changed to meet special requirements. TOE and TA items issued to individuals are not listed. Such

equipment is normally carried in trailers. Since the company is only 65 percent mobile, it will be necessary to obtain additional transportation to move the company in one operation. Additional lowbed trailers and prime movers are required to move the four rough terrain forklift trucks.

### Company Headquarters

| Vehicle                                              | Equipment                                                                                                                                                                                                                                                                                                                                                                                                                            | Personnel                                                                             |
|------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Truck, Utility, ¼-Ton.                               | Radio Set, Portable, Hand-Carried (1).<br>Detector Kit, Chemical Agent (1).                                                                                                                                                                                                                                                                                                                                                          | Light Truck Driver.<br>Company Commander.<br>First Sergeant.                          |
| Trailer, Cargo, ¼-Ton.                               | Generator, 1.5 KW (1).<br>Light Set, Gen Illuminating, Comd Post (1).<br>Antenna Equipment, Radio (1).                                                                                                                                                                                                                                                                                                                               |                                                                                       |
| Truck, Cargo, ¾-Ton.<br><br>(Communication Vehicle). | Radio-Teletypewriter Set, Vehicle-Mounted (1).<br>Teletypewriter Set, Light-Weight, Transportable (1).<br>Telephone Set, Field (1).<br>Cipher Machine (1).<br>Switchboard, Telephone, Manual, w/Swbd-Tel Set (1).<br>Terminal Strip, Telegraph-Telephone (2).<br>Terminal, Telegraph-Telephone, Frequency Shift Modulation (1).<br>Kit, Wire Splicing (1)<br>Panel, Marker, Ground Signal (2).                                       | Radio TT Operator.<br>Radio TT Team Chief.<br>Radio TT Operator.                      |
| Truck, Cargo, ¾-Ton.<br><br>(Communication Vehicle). | Radio-Teletypewriter Set, Vehicle-Mounted (1).<br>Teletypewriter Set, Light-Weight, Transportable (1).<br>Telephone Set, Field (1).<br>Terminal Strip, Telegraph-Telephone (2).<br>Terminal, Telegraph-Telephone, Frequency Shift Modulation (1).<br>Switchboard, Telephone, Manual, w/Swbd-Tel Set (1).<br>Cipher Machine (1).                                                                                                      | Radio TT Operator.<br>Radio TT Team Chief.<br>Radio TT Operator.<br>Sr Swbd Operator. |
| Truck, Cargo, 2½-Ton.<br><br>(Kitchen Truck).        | Range Outfit, Field, Gasoline (4).<br>Accessory Outfit, Gasoline, Field Range (1).<br>Clock, Alarm, Mechanical (1).<br>Can, Ash and Garbage, 32 gal (4).<br>Can, Ash and Garbage, 10 gal (4).<br>Cooking Outfit, Field, w/Stove (2).<br>Food Container, Insulated (8).<br>Heater, Immersion (4).<br>Tableware Outfit, Field (1).<br>Tent, Kitchen, w/Pins and Poles (1).<br>Lantern, Gasoline (1).<br>Launcher, Rocket, 3.5-in. (1). | Cook's Helper.<br>Mess Steward.<br>First Cook.                                        |
| Trailer, Tank Water, 1½-Ton.                         |                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                       |



| Vehicle                                             | Equipment                                                                                                                                                                                                                                                                                                                                    | Personnel                                                                                             |
|-----------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|
| Truck, Cargo, 2½-Ton, w/Ring Mount (Unit Supply).   | Gun, Machine, Cal .50 (1).<br>Chain, Assy, Single Leg, 16-ft (1).<br>Mount, Tripod, Machine Gun, Cal .50 (1).<br>Guidon (1).<br>Tent, CP, w/Pins and Poles (1).<br>Typewriter, Non-Ptbl, 11-in. Carriage (1).<br>Typewriter, Non-Ptbl, 14—15-in. Carriage (1).<br>Typewriter Portable w/Carrying Case (1).<br>Heater, Space, 45,000 Btu (3). | Armorer.<br>Supply Sergeant.<br>Company Clerk.<br>Personnel Administration Clerk.<br>Ammo Guards (4). |
| Trailer, Cargo, 1½-Ton.                             | Kit, Barber, w/Case (1).<br>Lantern, Gasoline (4).<br>Table, Camp, Folding (2).<br>Chairs, Folding (2).<br>Safe, 26-in High (1).<br>Burner, Oil Stove, Tent (3).<br>Desk, Fld, 19¾-in. Wide (1).<br>Desk, Fld 22½-in. Wide (1).                                                                                                              |                                                                                                       |
| Truck, Cargo, 2½-Ton.<br><br>(Unit Supply).         | Tent, GP, Med, w/Pins and Poles (1).<br>Screen, Latrine, w/Pins and Poles (1).<br>Wire, Field, on Reel (10).<br>Radiacmeter, General Utility (2).<br>Radiacmeter, Portable (2).                                                                                                                                                              | Wireman.<br>Sr Ammo Guard.<br>Ammo Guards (4).<br>Swbd Operator.                                      |
| Trailer, Cargo, 1½-Ton.<br><br>(Kitchen Equipment). | Bag, Water, Sterilizing, w/Ropes and Cover (3).<br>Can, Ash and Garbage, 32 gal (12).<br>Heater, Immersion, Liquid Fuel (8).<br>Heater, Immersion, Gas (1).<br>Pail, Metal, 3½-gal (5).<br>Rations.                                                                                                                                          |                                                                                                       |

# OPERATIONS SECTION

|                        |                                                                                                                                                                                                                                        |                                                                                                                                  |
|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|
| Truck, Utility, ¼-Ton. | Radio Set, Portable, Hand-Carried (1).                                                                                                                                                                                                 | Inventory Clerk.<br>Operations Officer.<br>Chief Ammo Clerk.<br>Clerk Typist.                                                    |
| Trailer, Cargo, ¼-Ton. | Telephone Set, Field (1).<br>Trunk, Locker.<br>Panel, Marker, Ground Signal (2).<br>Miscellaneous Section Supplies.                                                                                                                    |                                                                                                                                  |
| Truck, Cargo, 2½-Ton.  | Tents, GP, w/Pins and Poles (1).<br>Chain, Assy, 16-ft Long (1).<br>Launcher, Rocker, 3.5-in (1).                                                                                                                                      | Stock Rec Clerk.<br>Ammo Supply Off.<br>Asst Ch Ammo Clerk.                                                                      |
| Trailer, Cargo 1½-Ton. | Burner, Oil Stove (2).<br>Heater, Space, 45,000 BTU (2).<br>Add-Subtracting Mach (2).<br>Calculating Mach (1).<br>Table, Camp, Folding (8).<br>Typewriter, Non-Ttbl, 11-in Carriage (2).<br>Typewriter, Non-Ptbl, 18-in. Carriage (2). | Ammo Storage Insp (2).<br>Sr Ammo Rec Clerk (3).<br>Ammo Rec Clerk (7).<br>Clerk Typist.<br>Inventory Clerk.<br>Stock Rec Clerk. |

## SERVICE PLATOON

| Vehicle                                                    | Equipment                                                                                                                                                                                                                                                                                                                                                                                                              | Personnel                                                                     |
|------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|
| Truck, Cargo, 5-Ton, w/Dolly, Trailer Converter.           | Tent, Maintenance, w/Frame and Pins (1).<br>Heater, Duct Type 250,000 BTU (1).<br>Conveyor, Gravity, Wheel, 10 ft Section (30).<br>Conveyor, Gravity, Wheel, 45-Degree Curved Section (2).<br>Support, Gravity Conveyor (60).                                                                                                                                                                                          | Heavy Truck Driver.<br>Tractor Operator.<br>Engr Eqp Mech.                    |
| Semitrailer, Lowbed, 25-Ton.                               | Tractor, Full Tracked, w/Armored Cab; Bulldozer (1).<br>Blade; Power Control Unit; Winch; Scoop, Mine Laying.                                                                                                                                                                                                                                                                                                          |                                                                               |
| Truck, Cargo, 5-Ton, w/Dolly, Trailer Converter.           | Conveyor, Gravity, Wheel, 10 ft Section (30).<br>Conveyor, Gravity, Wheel, 45-Degree Curved Section (2).<br>Support, Gravity Conveyor (60).                                                                                                                                                                                                                                                                            | Heavy Truck Driver.<br>Tractor Operator.                                      |
| Semitrailer, Lowbed, 25-Ton.                               | Tractor, Full-Tracked, w/Armored Cab; Bulldozer Blade; Power Control Unit; Winch; Scoop, Mine Laying (1).                                                                                                                                                                                                                                                                                                              |                                                                               |
| Truck, Cargo, 5-Ton.                                       | Cabinet, Spare Parts, Type IV (3).<br>Chain, Assy, 16-ft Long (1).<br>Tool Kit, Organizational Maint, No. 2, Common (1).<br>Tool Kit, Organizational Maint, No. 2, Supplemental (1).<br>Stencil Cutting Mach, 1-in. H (1).<br>Stencil Cutting Mach, ¾-in. H (1).<br>Stencil Cutting Mach, ½-in. H (1).<br>Saw, Cir, Ptbl Elec (1).                                                                                     | Heavy Truck Driver.<br>Packing-Crating SP (2).                                |
| Trailer, Cargo, 1½-Ton.                                    | POL                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                               |
| Crane-Shovel, Trk Mtd, 20-Ton.                             |                                                                                                                                                                                                                                                                                                                                                                                                                        | Crane Operator.                                                               |
| Crane-Shovel, Trk Mtd, 20-Ton.                             |                                                                                                                                                                                                                                                                                                                                                                                                                        | Crane Operator.                                                               |
| Truck, Cargo, ¾-Ton.                                       | Radio Set, Portable, Hand-Carried (1).<br>Radiacmeter, General Utility (1).<br>Radiacmeter, Portable (1).<br>Telephone Set, Field (1).<br>Launcher, Rocket, 3.5-in. (1).                                                                                                                                                                                                                                               | Sr Lt Trk Driver.<br>Maintenance Off.<br>Plat Sgt.<br>Dispatch Control Clerk. |
| Trailer, Cargo, ¾-Ton.                                     | Chair, Folding (2).<br>Lantern, Gasoline (2).                                                                                                                                                                                                                                                                                                                                                                          |                                                                               |
| Truck, Cargo, 2½-Ton, w/Ring Mount (used by 1st Mag Plat). | Gun, Machine, Cal .50 (1).<br>Mount, Tripod, MG, Cal .50 (1).<br>Bar, Wrecking, 30-in. Long (6).<br>Extinguisher, Fire, Carbon Dioxide, 1 lb (6).<br>Extinguisher, Fire, Vaporizing, Liq, 1 gal (2).<br>Pump, Centrifugal, Base Mtd (1).<br>Chain, Assy, 16-ft Long (1).<br>Burner, Oil Stove, Tent (2).<br>Chair, Folding (1).<br>Table, Camp, Folding (1).<br>Dispensing Pump (1).<br>Heater, Space, 45,000 BTU (2). | Light Truck Driver.<br>Section Chief.<br>Sr Ammo Str Sp.                      |

| Vehicle                                                   | Equipment                                                                                                                                                                                                                                                                                                                                                                                                            | Personnel                                                                                                                                                  |
|-----------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Truck, Cargo, 2½-Ton (used by 1st Mag Plat).              | Paulin, Duck, 17 x 20 ft (20).<br>Paulin, Duck, 40 x 20 ft (20).<br>Tent, GP, w/Pins and Poles (1).<br>Truck, Hand, 2-Wheeled (3).                                                                                                                                                                                                                                                                                   | Light Truck Driver.<br>Section Chief.<br>Sr Ammo Stor Sp.                                                                                                  |
| Trailer, Cargo, 1½-Ton.                                   | Tool Set, Fld, Ord Ammo Co (1).<br>Generator Set, Gas, 0.5 KW (1).<br>Floodlight Set, 5 KW (1).<br>Tool Kit, Camp, Engr Sqd (2).<br>Sign Painting Set (1).                                                                                                                                                                                                                                                           |                                                                                                                                                            |
| Truck, Cargo, 2½-Ton (used by 1st Mag Plat).              | Personnel.                                                                                                                                                                                                                                                                                                                                                                                                           | Light Truck Driver.<br>Section Chief.<br>Sr Ammo Stor Sp.<br>Ammo Renv.<br>Ammo Renv Helper.<br>Ammo Stor Sp (14).<br>CML Ammo Stor Sp (2).                |
| Trailer, Cargo, 1½-Ton.                                   |                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                            |
| Truck, Cargo, 2½-Ton (used by 1st Mag Plat).              | Personnel.                                                                                                                                                                                                                                                                                                                                                                                                           | Light Truck Driver.<br>Sr Ammo Stor Sp.<br>Ammo Insp.<br>Ammo Renv.<br>CML Ammo Stor Helper (2).<br>Ammo Stor Helper (15).                                 |
| Trailer, Cargo, 1½-Ton.                                   |                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                            |
| Truck, Cargo, 2½-Ton, w/Ring Mount (used by 2d Mag Plat). | Gun, Mach, Cal .50 (1).<br>Mount, Tripod, MG, Cal .50 (1).<br>Bar, Wrecking, 30-in. Long (6).<br>Extinguisher, Fire, Carbon Dioxide, 15 lb (6).<br>Extinguisher, Fire, Vaporizing, Liq, 1 gal (2).<br>Pump, Centrifugal, Base Mtd (1).<br>Chain, Assy, 16-ft Long (1).<br>Burner, Oil Stove, Tent (2).<br>Chair, Folding (1).<br>Table, Camp, Folding (1).<br>Dispensing Pump (1).<br>Heater, Space, 45,000 BTU (2). | Light Truck Driver.<br>Section Chief.<br>Sr Ammo Stor Sp.                                                                                                  |
| Truck, Cargo, 2½-Ton (used by 2d Mag Plat).               | Paulin, Duck, 17 x 20 ft (20).<br>Paulin, Duck, 40 x 20 ft (20).<br>Tent, GP, w/Pins and Poles (3).                                                                                                                                                                                                                                                                                                                  | Packing-Crating Sp.<br>Section Chief.                                                                                                                      |
| Trailer, Cargo, 1½-Ton.                                   | Tool Set, Fld, Ord Ammo Co (1).<br>Generator Set, Gas, 0.5 KW (1).<br>Floodlight Set, 5 KW (1).<br>Tool Kit, Camp, Engr Sqd (2).<br>Sign Painting Set (1).                                                                                                                                                                                                                                                           |                                                                                                                                                            |
| Truck, Cargo, 2½-Ton (used by 2d Mag Plat).               | Personnel.                                                                                                                                                                                                                                                                                                                                                                                                           | Packing-Crating Sp.<br>Section Chief.<br>Sr Ammo Stor Sp.<br>Ammo Renv Helper.<br>CML Ammo Stor Sp (2).<br>CML Ammo Stor Helper (2).<br>Ammo Stor Sp (13). |

| Vehicle                                     | Equipment  | Personnel                                                                |
|---------------------------------------------|------------|--------------------------------------------------------------------------|
| Trailer, Cargo, 1½-Ton.                     |            |                                                                          |
| Truck, Cargo, 2½-Ton (used by 2d Mag Plat). | Personnel. | Mech Helper.<br>Sr Ammo Stor Sp.<br>Ammo Renv.<br>Ammo Stor Helper (18). |
| Trailer, Cargo, 1½-Ton.                     |            |                                                                          |
| Truck, Cargo, 2½-Ton (used by 2d Mag Plat). | Personnel. | Engr Eqp Mech.<br>Ammo Insp.<br>Ammo Renv.<br>Ammo Stor Helper (18).     |
| Trailer, Cargo, 1½-Ton.                     |            |                                                                          |
| Truck, Wrecker, Med, 5-Ton.                 |            | Wrecker Operator.<br>Wheeled Veh Mech.<br>Painter.                       |
| Truck, Wrecker, Med, 5-Ton.                 |            | Wrecker Operator.<br>Wheeled Veh Mech.<br>Painter.                       |

## 1st MAGAZINE PLATOON

|                             |                                                                                                                                |                                                                  |
|-----------------------------|--------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------|
| Truck, Utility, ¼-Ton.      | Radio Set, Portable Hand-Carried (1).                                                                                          | Ammo Stor Sp.<br>Plat Ldr.<br>Plat Sgt.<br>CML Ammo Stor Helper. |
| Trailer, Cargo, ¼-Ton.      | Demolition Equipment Set (1).<br>Radiacmeter, General Utility (1).<br>Radiacmeter, Portable (1).<br>Telephone Set, Field (5).  |                                                                  |
| Truck, Utility, ¼-Ton.      | Launcher, Rocket, 3.5-in. (1).                                                                                                 | Ammo Renv Helper.<br>Asst Plat Ldr.<br>Section Chief (2).        |
| Trailer, Cargo, ¼-Ton.      |                                                                                                                                |                                                                  |
| Truck, Tank, Water, 2½-Ton. | Hose, Cotton, Rubber Lined, 50 ft Long (5).<br>Hose, Cotton, Rubber Lined, Coupling, 16 ft Long (2).<br>Nozzle, Fire Hose (1). | CML Ammo Stor Helper.<br>Ammo Stor Sp (2).                       |

## 2d MAGAZINE PLATOON

|                        |                                                                                                                               |                                                                  |
|------------------------|-------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------|
| Truck, Utility, ¼-Ton. | Radio Set, Portable, Hand-Carried (1).                                                                                        | Ammo Stor Sp.<br>Plat Ldr.<br>Plat Sgt.<br>CML Ammo Stor Helper. |
| Trailer, Cargo, ¼-Ton. | Demolition Equipment Set (1).<br>Radiacmeter, General Utility (1).<br>Radiacmeter, Portable (1).<br>Telephone Set, Field (5). |                                                                  |

| Vehicle                                  | Equipment                                                                                                                      | Personnel                                                 |
|------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------|
| Truck, Utility, $\frac{1}{4}$ -Ton.      | Launcher, Rocket, 3.5-in. (1).                                                                                                 | Ammo Renv Helper.<br>Asst Plat Ldr.<br>Section Chief (2). |
| Trailer, Cargo, $\frac{1}{4}$ -Ton.      |                                                                                                                                |                                                           |
| Truck, Tank, Water, $2\frac{1}{2}$ -Ton. | Hose, Cotton, Rubber Lined, 50 ft Long (5).<br>Hose, Cotton, Rubber Lined, Coupling, 16 ft Long (2).<br>Nozzle, Fire Hose (1). | CML Ammo Stor Helper.<br>Ammo Stor_Sp (2).                |



## APPENDIX III

## RECOMMENDED OUTLINE FOR A STANDING OPERATING PROCEDURE

1. Heading. The heading contains the following information:

- a. Unit designation.
- b. Location or mailing address.
- c. Date of issue.
- d. Number.
- e. Title (Standing Operating Procedure).

2. Body. The body contains concise instructions relating to each of the following when applicable:

a. General.

- (1) Purpose and scope.
- (2) Mission.
- (3) Assignment.
- (4) Capabilities.
- (5) Organizational chart showing unit subdivisions, to include personnel, vehicles, and equipment.

b. Command.

- (1) Command post.
- (2) Signal communications.
- (3) Liaison officers.
- (4) Procedure guides.
- (5) Orders.
- (6) Intelligence.

c. Security.

- (1) Plan.
- (2) Conduct.
- (3) Responsibilities.
- (4) Measures.
- (5) Weapons.
- (6) March and bivouac.
- (7) Mines and booby traps.
- (8) CBR attacks.
- (9) Reconnaissance.
- (10) Foxholes.
- (11) Patrols.

d. Movement.

- (1) Order of march.
- (2) Distances between vehicles.
- (3) Maximum speeds, day and night.
- (4) Reconnaissance.
- (5) Refueling and feeding.
- (6) Halts.
- (7) Air and ground protection.
- (8) CBR protection.
- (9) Night movement.

(10) Guides.

(11) Vehicle identification.

(12) Control officer.

(13) Trail officer.

(14) Loading.

(15) Communications during march.

e. Training.

- (1) General.
- (2) Responsibilities.
- (3) Objectives.
- (4) Directives.
- (5) Phases.
- (6) Equipment.
- (7) Schools.
- (8) On-the-job.
- (9) Records and reports.

f. Personnel.

- (1) Military justice.
- (2) Strength reports.
- (3) Decorations and citations.
- (4) Prisoners of war.
- (5) Casualties.

g. Operations.

(1) Company headquarters.

- (a) Company officers.
- (b) Administration.
- (c) Mess.
- (d) Supply.
- (e) Mail procedures.
- (f) Fire prevention.
- (g) Area policing.
- (h) Security.
- (i) Communications.

(2) Operations platoon.

- (a) Operations officer.
- (b) Area plans or layouts.
- (c) Records and reports.
- (d) Inventory.
- (e) Status of stocks.
- (f) Procedure for receipt, issue, and shipments.
- (g) Labor pool.

(3) Service platoon.

- (a) Maintenance officer.
- (b) Equipment pool.
- (c) Fire prevention and firefighting.
- (d) Organizational maintenance.

- (e) Inspection of equipment.
  - (f) In-storage maintenance.
  - (g) Detachment of operators and equipment.
- (4) Magazine platoons.
- (a) Magazine officer.
  - (b) Assistant magazine officer.
  - (c) Layout of magazine areas.
  - (d) In-storage inspection.
  - (e) On-the-job training.
  - (f) Supervision of additional labor.
  - (g) Procedure for receipt, issue, and shipments.
  - (h) Firefighting.
  - (i) Storage procedures.
  - (j) Independent operations.
3. Ending. The ending of a typical SOP contains the following:
- a. Signature of commander.
  - b. List of inclosures or annexes.
  - c. Distribution and references.
  - d. Authentication, if applicable.

## INDEX

|                                               | Paragraph  | Page   |
|-----------------------------------------------|------------|--------|
| Advance party.....                            | 42         | 22     |
| Airborne operations.....                      | 37         | 19     |
| Amphibious operations.....                    | 36         | 19     |
| Area requirements.....                        | 44, Fig. 2 | 23, 24 |
| Vehicle assembly area.....                    | 44e        | 23     |
| Vehicle holding area.....                     | 44d        | 23     |
| Arctic operations.....                        | 39         | 20     |
| Assignment and basis of allocation.....       | 6          | 3      |
| Capabilities.....                             | 7          | 3      |
| Communications:                               |            |        |
| Communications instructions.....              | 62         | 31     |
| Duties and responsibilities of personnel..... | 64         | 35     |
| General.....                                  | 58         | 31     |
| Messengers.....                               | 61         | 31     |
| Radio communications.....                     | 60         | 31     |
| Security.....                                 | 63         | 34     |
| Training.....                                 | 65         | 36     |
| Wire communications.....                      | 59         | 31     |
| Definitions.....                              | 4          | 2      |
| Department of Army publications.....          | App. I     | 37     |
| Desert operations.....                        | 40         | 20     |
| Duties of personnel:                          |            |        |
| Company headquarters.....                     | 19, 20     | 12     |
| Magazine platoon.....                         | 23         | 15     |
| Operations section.....                       | 21         | 14     |
| Service platoon.....                          | 22         | 15     |
| Employment.....                               | 8          | 4      |
| Equipment:                                    |            |        |
| Additional items.....                         | 16         | 10     |
| Crane-shovel, truck mounted.....              | 14e        | 10     |
| Distribution.....                             | 15         | 10     |
| Floodlight set.....                           | 14f        | 10     |
| Forklift truck.....                           | 14a        | 9      |
| General.....                                  | 14         | 9      |
| Gravity roller conveyor.....                  | 14c        | 9      |
| Hand truck.....                               | 14b        | 9      |
| Tractor, full-tracked.....                    | 14d        | 10     |
| Vehicles.....                                 | 17         | 10     |
| Establishment of an ammunition installation:  |            |        |
| Site selection.....                           | 41         | 21     |
| Area layout.....                              | 41c        | 22     |
| Factors governing.....                        | 41b        | 21     |
| General.....                                  | 41a        | 21     |
| Priority of tasks.....                        | 43         | 23     |
| Reconnaissance report.....                    | 41d        | 22     |
| Signs.....                                    | 46         | 27     |
| Subdivision of storage area.....              | 45         | 27     |
| Loading plan.....                             | App. II    | 40     |
| Maintenance.....                              | 18         | 11     |
| Mission.....                                  | 5          | 3      |
| Operations:                                   |            |        |
| Combat zone:                                  |            |        |
| Ammunition supply points.....                 | 33         | 18     |
| Ammunition supply point receipts.....         | 34         | 18     |
| Army depots.....                              | 32         | 18     |
| General.....                                  | 31         | 18     |

|                                    | Paragraph | Page |
|------------------------------------|-----------|------|
| Issues .....                       | 35        | 18   |
| Communications zone:               |           |      |
| Auxiliary labor .....              | 28        | 17   |
| Equipment .....                    | 29        | 18   |
| General .....                      | 24        | 17   |
| Issues .....                       | 27        | 17   |
| Receipts .....                     | 26        | 17   |
| Renovation .....                   | 30        | 18   |
| Storage .....                      | 25        | 17   |
| Organization and Functions:        |           |      |
| Company headquarters .....         | 10        | 5    |
| General Figure 1 .....             | 9         | 5, 6 |
| Magazine platoon .....             | 13        | 8    |
| Operations section .....           | 11        | 7    |
| Service platoon .....              | 12        | 8    |
| Scope .....                        | 2         | 2    |
| Security and defense:              |           |      |
| Air attack .....                   | 55        | 29   |
| Camouflage .....                   | 50        | 28   |
| CBR attack .....                   | 56        | 29   |
| Defense plan .....                 | 48        | 28   |
| Defense positions .....            | 49        | 28   |
| Destruction of ammunition .....    | 57        | 30   |
| Dispersion .....                   | 51        | 29   |
| General .....                      | 47        | 28   |
| Ground attack .....                | 53        | 29   |
| Guerrilla action .....             | 54        | 29   |
| Security inspections .....         | 52        | 29   |
| Special Regulations .....          | App. I    | 37   |
| Standing operating procedure ..... | App. III  | 46   |
| Supply Manuals .....               | App. I    | 37   |
| Technical Bulletins .....          | App. I    | 37   |
| Technical Manuals .....            | App. I    | 37   |

BY ORDER OF THE SECRETARY OF THE ARMY:

G. H. DECKER,  
General, United States Army,  
Chief of Staff.

OFFICIAL:

R. V. LEE,  
Major General, United States Army,  
The Adjutant General.

Distribution:

*Active Army:*

To be distributed in accordance with DA Form 12-7 requirements for FM 9-series (unclas) plus the following formula:

|                         |                                                |
|-------------------------|------------------------------------------------|
| DASA (10)               | TOE 9-17 (5)                                   |
| DCSPER (3)              | USA Ord Sch (800)                              |
| ACSI (1)                | US ARADSCH (10)                                |
| DCSOPS (3)              | USAARMS (10)                                   |
| DCSLOG (5)              | USACMLCSCH (10)                                |
| Tech Stf, DA (3) except | USAAMS (25)                                    |
| CofOrd (50)             | USAES (5)                                      |
| US ARADCOM (10)         | USA Engr-Ord Sch, Europe (20)                  |
| US ARADCOM Rgn (10)     | USAIS (35)                                     |
| MDW (2)                 | USATSCH (10)                                   |
| Seventh US Army (10)    | USAOGMS (50)                                   |
| EUSA (10)               | USASIS (5)                                     |
| Corps (5)               | PMGS (75)                                      |
| Div (5)                 | USASCS (5)                                     |
| Bde (1)                 | USACGSC (10)                                   |
| Regt/Gp/BG (1) except   | AFSC (10)                                      |
| Ord Gp (5)              | USAWC (10)                                     |
| TOE 9-22 (10)           | TAGSUSA (3)                                    |
| Ord Bn (4) except       | TJAGSA (3)                                     |
| TOE 9-86 (10)           | USAQMS (10)                                    |
| Ord Co (2) except       | Units org under fol TOE 9-510 (AA,AC,DA,EA)(2) |

*NG:* State AG (3); units—same as Active Army except allowance is one copy to each unit.

*USAR:* Same as Active Army except allowance is one copy to each unit.

For explanation of abbreviations used, see AR 320-50.

☆U.S. GOVERNMENT PRINTING OFFICE: 1961-5705